SEPTEMBER 28, 1953

NEWS ISSUE

Electrical World

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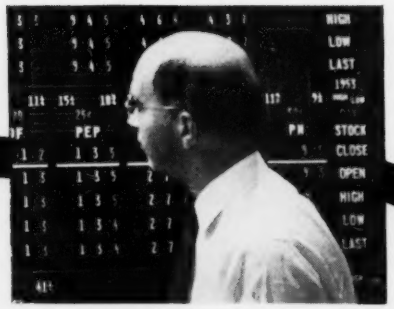
TYPICAL U.S. UTILITY

BONDS



Security Analyst Harold Young . . .

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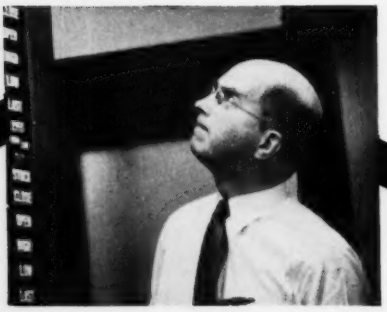
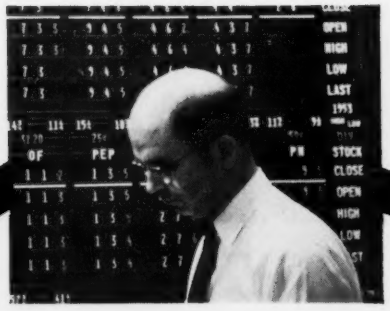


. . . keeps a financial eye on utilities . . .

COMMON



. . . and tells investors what he sees

"UNIT SYSTEM" D-C NETWORK ANALYZER is used to evaluate a typical distribution feeder by J.F. Fuller, G-E application engineer, who developed the instrument as a practical tool for utility circuit calculations. Mr. Fuller was presented the Coffin Award, G.E.'s highest honor for his contribution to the electrical art. Transparent grid, placed over ordinary street map to establish unit distance and number squares, matches board connections.

"Unit" method of distribution analysis speeds system planning—circuit evaluation

DETAILED DEVELOPMENT of portable board solution is proved in detail on network analyzer. J. F. Fuller, Robert Protheroe, V. P. in Charge of Operations, Black Hills Power and Light Co., Rapid City, S. D., and F. F. Stevens, G-E Sales Engineer, check final results.

Distribution system planning and evaluation can be simplified through the use of the "unit system" of circuit analysis. Originally conceived by G.E.'s D. K. Blake, and recently improved by G-E application engineer J. F. Fuller's development of a portable d-c calculating board, the "unit system," can save utility distribution engineers valuable man-hours by reducing the time required to consider the numerous approaches to distribution problems.

Knowing the basic load to be served and the voltage limits to be maintained, the distribution engineer can quickly evaluate the economics of possible distribution system changes from a standard city street map, without the complicating details of wire size, equivalent spacing, power factor or individual transformer location. The most promising solutions can be quickly determined, then critically compared and carefully evaluated—factoring in the necessary specific circuit details.

To the distribution engineer, the "unit system" means a faster, simpler method of narrowing down possible system layouts to a few worthy of a complete network analysis.

For more complete details on the "unit system" contact your G-E sales engineer or write for GET-1984, General Electric Co. Sect. 301-221, Schenectady 5, N. Y.

1879 75 1953 YEARS OF ELECTRICAL PROGRESS

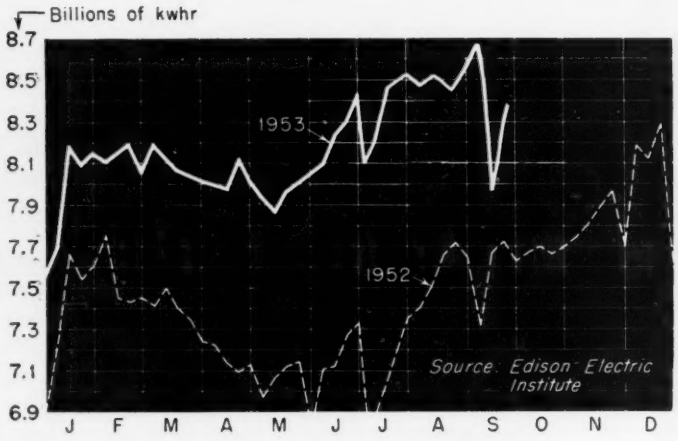
MORE POWER TO AMERICA

GENERAL ELECTRIC

VOLUME 140, NO. 13

September 28, 1953

Electrical World



Output Week Ended Sept. 19—8,394,707,000 Kwhr

Per Cent Change From Previous Year

	Total US	New Eng.	Mid. Atlan.	Cent. Ind.	West Cent.	South-east	South Cent.	Rocky Mount.	Pacific NW	Pacific SW
Sept. 19	+8.7	+4.9	+1.1	+3.2	+8.1	+20.1	+5.5	+11.0	+23.1	+11.3
Sept. 12	+4.0	−0.1	−1.6	−1.9	+1.1	+16.6	−0.7	+3.7	+15.2	+7.7
Sept. 5	+18.7	+20.9	+18.9	+19.0	+20.4	+28.9	+9.7	+12.2	+12.4	+10.8

Electric Power Statistics

		Latest Month	Preceding Month	Year Ago
Peak Load (Million Kw)	July	76.6	76.0	67.2
Capacity (Million Kw)	July	86.13	85.06	77.96
Production (Billion Kwhr)	July	38.03	36.83	32.52
Hydro	July	8.75	9.10	8.74
Fuel	July	29.28	27.73	23.78
Fuel Consumption				
Coal (Million Tons)	July	9.59	9.06	7.91
Oil (Million Barrels)	July	6.35	6.12	4.39
Gas (Billion Cu Ft)	July	109.35	103.73	99.46
Sales (Billion Kwhr)	June	31.77	31.32	27.67
Residential	June	8.37	8.50	7.44
Commercial	June	5.46	5.18	5.00
Industrial	June	15.80	15.49	13.20
Other	June	2.14	2.16	2.03
Net Income Class A & B Companies ($ Million)	June	73.61*	77.81	63.02
Estimated Dec. '53 Peak (Million Kw)	June	86.2	86.1	88.3
Kwhr per Residential Customer (12 Month Average)	June	2,257	2,241	2,091
Revenue per Kwhr Residential Service (12 Month Average)	June	2.76¢	2.76¢	2.78¢
Canadian Production (Billion Kwhr)	June	5.26	5.76	4.99

Business Statistics

FRB Industrial Production Index†††	July	235*	241	194
Gross National Product Annual Rate ($ Billion)	2nd Qtr.	372.4	362.0	345.1
EW 5 Industry Production Index	July	130.6	130.9	95.6
ENR Construction Cost Index††	Aug.	128.3	126.6	122.7
BLS Consumer's Price Index	July	114.7	114.5	114.1
NEMA Insulation Materials Sales Index†	July	150	174	123
NEMA Electric Appliance Sales Index†	July	86	105	100
NEMA Household Refrig. Sales Index†	July	87	88	100

*Preliminary **Revised †1947-49=100 ††1949=100 †††Unadjusted

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THIS IS AN ELECTRICAL PRECIPITATOR INSULATOR

If you were to stir up in your mind a witches' brew of the most bedevilling operating conditions to which a porcelain insulator could be assigned, you wouldn't miss by much the actual surroundings in which this insulator is serving.

It is a bushing which insulates and supports the electrical (precipitating) elements of a high-voltage electrostatic precipitator. The enclosed conductor is at high potential, which in the first place calls for porcelain of complete electrical soundness to withstand the voltage. The upper part is loaded in heavy compression in carrying the weight of the precipitating elements.

The purpose of an electrostatic precipitator is to clean dirty air, so the porcelain is always exposed to contamination; from job to job it encounters almost every type of contaminant imaginable—the rapidly increasing use of electrical precipitators in chemical plants greatly adding to the problem. Often very high temperature operation is encountered, and sometimes thermal shock. Frequently the ambient is at 100% humidity. And to top it all off, the precipitating elements of the equipment are periodically cleaned of deposited dirt by means of an air rapper.

Production of a successful piece for this severe duty depends on the Lapp fog-type design . . . on long experience in cooperating with the manufacturers of precipitation equipment . . . and on skill in manufacture and assembly of difficult pieces to performance requirements.

We hope that your operating requirements for porcelain are not so severe. But whatever the conditions, we are sure you want security and dependability of performance. We're proud to call to your attention that the same quality of porcelain, the same engineering skill in design, is available in all Lapp porcelain—in components for electrical equipment—in insulators for power transmission and station use.

Lapp Insulator Co., Inc., Le Roy, N.Y.

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THE ELECTRICAL WEEK

The Issue's News Highlights . . . Three Northwest utilities have signed 20-year contracts for power from BPA . . . Interior has announced new marketing criteria for sale of power in the Missouri River basin area.

REA has completed reorganization of the administration of the electric program. Changes include regrouping of area offices and creation of new divisions.

Arkansas super co-op proposes to build steam plant in Oklahoma to get around court ruling prohibiting construction of station in Arkansas. REA has agreed to delay its decision on rescinding loan for plant.

Formation of a "non-utility" industrial firm, perhaps by a group of power companies, to operate the first commercial power reactor was proposed last week by Dr William L. Davidson, director of AEC's Office of Industrial Development, at the NARUC convention in New York City. The Association elected C. L. "Roy" Doherty of South Dakota commission president for the coming year.

Reclamation Commissioner Wilbur Dexheimer has made a top-level switcheroo in the USBR Project Planning Division. Division Chief John W. Dixon and Assistant Chief Newcomb B. Bennett, Jr., will exchange jobs, with Dixon reporting to Bennett. This, says Dexheimer, is the "final change" to be made at this time in the bureau's top staff.

Interior Secretary McKay, making his third speech on power in eight days, told PEA's annual meeting in Philadelphia on Wednesday that it was not the function of his department to assume responsibility for the ultimate federalization of the entire power industry. "However," he said, "I can't agree with the view recently expressed that the federal government should get out of the power business lock, stock and barrel." John M. Orr, personnel director of Duquesne Light Co, was elected association president.

Bonneville Power Administration's proposed budget for the next fiscal year will fall close to $40 million. This is about 10% under amounts approved by Congress for the current year and a one-third cutback from the 1952 program. Unlike other agencies, BPA is being permitted to expend virtually all of its current $44,870,000 budget. Other Interior units have been ordered to hold funds in reserve.

Congressional defense of the right of cooperatives to "construct and operate generating plants and transmission lines" was asked in a resolution passed by Iowa Rural Electric Cooperative Association at its 12th Annual Meeting in Des Moines, Iowa. The resolution urged the REA administrator to "make the . . . right effective" by granting more G&T loans to co-ops. Another resolution asked Congress to maintain interest rate at 2%. Dwight G. Meyer of Odebolt was elected president of the association.

Off the Washington Wire—International Joint Commission is slated to appoint two U. S. members this week to the International Niagara Board of Control which is to supervise control and remedial works above Niagara Falls. U. S. members will come from Federal Power Commission and Army Corps of Engineers. A similar board will be named for the St. Lawrence development.

Narragansett Electric Co has acquired title to a site at Rome Point, North Kingstown, R. I., on the west side of Narragansett Bay for a steam generating station. Preliminary design contemplates two 125,000 kw units, with ultimate installation of six machines. Initial development is not expected to begin before 1958.

Columbia Basin Interagency Committee has voted a unanimous stamp of approval on Idaho Gov Len Jordan's plan to set up a panel of the governors of the four Pacific Northwest states to effect what Jordan calls the "other half" of the partnership concept of federal power policy espoused by the Eisenhower Administration. Jordan intends to call the governors together within a few weeks.

Oklahoma Gas & Electric Co dedicated its $9.5-million Arbuckle Plant near Sulpher in ceremonies attended by 500.

The Southern Co system and the Middle South Utilities system have been interconnected as a result of a contract recently signed by executives of the two utility networks.

Oregon Hydroelectric Commission has approved Portland General Electric Co's application for a permit to build a rock earth-fill dam at Timothy Meadows on the upper Clackamas River. The project will firm up a total of 10,500 kw additional capacity at three downstream plants.

Financial—New York State Public Service Commission has authorized Long Island Lighting Co to increase its electric rate schedule by a little more than 3%, effective Jan. 1. Increase is expected to produce about $1,450,000 additional revenue annually . . . Pennsylvania Power Co, New Castle, inaugurated a $529,000 rate increase Saturday for its 63,000 customers.

Niagara Mohawk Power Co will sell $40 million of mortgage bonds at competitive bidding the end of October . . . Directors of Virginia Electric & Power Co have voted to issue 558,946 additional shares of common stock at competitive bidding.

Congratulations—Thomas G. Ayres is elected a vice president in charge of industrial relations for Commonwealth Edison Co . . . Copperweld Steel names Paul Van Wagner vice president. Van Wagner, formerly vice president of the firm's Wire and Cable Division, will continue as president of Copperweld Steel International.

(*Continued on page* 10)

SIGNING 20-year contracts for BPA power at Portland, Ore., are (l to r) C. R. Groth, assistant secretary, and W. T. Neill, vice president, Pacific P&L; A. W. Trimble, president, and W. L. Fitzpatrick, secretary, Mountain States Power; Frank M. Warren, Jr, executive vice president, and John J. Coughlin, assistant secretary, Portland GE; and Paul Raver, Bonneville Power administrator

Utilities Sign 20-Year Pacts with BPA

Portland General Electric Co, Pacific Power & Light Co, and Mountain States Power Co have signed for delivery of federal hydroelectric energy from Bonneville Power Administration under 20-year contracts. The investor owned utilities have been negotiating with BPA since early 1953. Similar pacts are expected to be inked by Washington Water Power Co and Puget Sound Power & Light Co within a few weeks.

As officials of the three companies signed at BPA office in Portland Sept. 18, Bonneville Power Administrator Paul J. Raver reported the contracts would be forwarded immediately to Secretary of Interior Douglas McKay for his approval.

Except for what one company spokesman called "fly speck" changes in phrasing of terms, the contracts remain as redrafted for a second study in early September by public agencies and BPA's handful of direct industrial customers (EW, Sept. 14, p 8). The two groups had until Sept. 10 to reply but neither group issued any public statement concerning their views on the redraft and presumably they are in substantial agreement with what McKay has called an effort to achieve equitable distribution of federal power to all classes of consumers in the Pacific Northwest.

The Terms . . . Major provisions of the new 20-year contracts follow:

- Continuance of priority on BPA power for public bodies and co-ops.
- Allocation of 500,000 kw of firm power to utilities before direct BPA industrial customers get any power beyond their present 1,052,460 kw.
- Allocation of the next 70,000 kw to firm up existing loads of direct industrial customers.
- Allocation of the next 1 million kw of firm energy to private utilities when and if the federal power becomes available.
- Limitation on both private utilities and public power groups in adding industrial loads of 10,000 kw or more.

The companies hailed the first long term contracts they have negotiated with the big transmission agency as falling into line with the Administration program for cooperative power development by all interests.

PGE's Executive Vice Pres Frank M. Warren, Jr, who has shouldered the major burden of negotiations for the utilities, characterized the contract as a "constructive step toward more stable relationship between the federal marketing agency and the state regulated utility companies" of the region.

Warren noted the contract does not immediately provide the utilities with all the power required because sufficient federal resources to meet all demands are not presently available, but he said the full potential benefit will accrue gradually over a period of years as federal projects are completed and new ones are built.

New Status . . . In a summary discussion of major points of the terms,

Warren said the significance of the contract is the priority clause which assures domestic and rural customers and the diverse commercial and industrial customers of PGE and the other investor utilities a share of future federal power supply ahead of new large electro-metallurgical and chemical industries served by BPA. "The new status granted general customers constitutes a most important feature of the new contract," he declared.

Referring to the limitation on both preferred public agency distributors—PUD's, co-ops, and municipal systems—and the private utilities in adding new firm industrial loads of 10,000 kw or more annually, Warren made a point of noting this will effect only the very large aluminum reduction plants and will operate only so long as the federal power supply remains restricted.

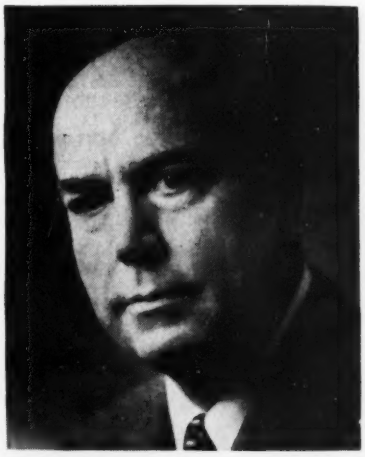
Absence of Washington Water Power Co and Puget Sound Power & Light Co was unexpected, but it was understood officials of these firms must again obtain authority from their boards of directors on the final draft. The contractual arrangement is also available to Idaho Power Co, California-Oregon Power Co, California-Pacific Utilities Co, and Montana Power Co if they wish to sign.

(*See "In the Industry," page* 10)

USBR Places $8 Million of Its Funds in Reserve

In line with the budget directive to make further spending cuts this year in preparation for greater decreases in fiscal 1955, the Bureau of Reclamation last week placed in reserve $8.2 million of the $155 million on hand July 1 for construction expenditure. Reserved funds are not locked up; they can be drawn upon if needed. Plan is to hold them back for later use.

Cuts in 25 projects make up the total reserved. Among them are eight projects with power generation features, some of which will be affected by the spending reductions. These projects, with the amount reserved from each, are: Central Valley, Calif., $880,000; Columbia Basin, Wash., $1,808,000; Davis Dam, Ariz.-Nev., $200,000; Fort Peck, Mont., $70,000; Palisades, Idaho, $200,000; Rio Grande, N. M.-Tex., $90,000; Riverton, Wyo., $130,000; and Kennewick Division of the Yakima Project, Wash., $95,000.



Donald C. McGraw . . .

Heads McGraw-Hill

Youngest son of founder is elected president of publishing firm to succeed late brother

Donald C. McGraw, vice president of McGraw-Hill Publishing Co since 1945, has been elected president of the firm. He succeeds his late brother, Curtis W. McGraw.

During World War II, Donald McGraw served as a consultant to the Publishing and Printing Division of the War Production Board.

The new president, youngest son of the late James H. McGraw, Sr, founder, has been with the company since 1919 when he joined the advertising staff of Chemical and Metallurgical Engineering. Two years later, he transferred to the pressroom and composing room. At that time McGraw-Hill operated its own printing plant in its building at 36 St. and 10 Ave., New York. In 1924 he assumed supervision of the operation of the building and of the printshop.

Becomes Secretary . . . In 1933 McGraw was made secretary of the company and put in charge of production and manufacturing. Since that time he has been responsible for the handling of all contracts for printing and binding, engraving, and paper supply for the entire McGraw-Hill operation. In 1945 he was named vice president for manufacturing and general services.

McGraw, in addition to being a director of the publishing company, is a director of McGraw-Hill Book Co and Newton Falls Paper Mill.

Missouri Power

Interior announces power marketing criteria for western and eastern Missouri basin area

Interior Department this month announced significant changes in the rules governing the sale of power from federal projects in the western and eastern Missouri River basin area.

Areas affected are portions of Wyoming, Colorado, Nebraska, Montana, Iowa, and Minnesota, and all of North Dakota and South Dakota.

Main points of the new criteria which will guide future contract negotiations are these:

1. Contracts will not be for periods exceeding 20 years unless there are special conditions warranting a greater contract term. (Under Reclamation Act of 1939 contracts could run to 40 years.)

2. No condition of sale (as in former contracts) will permit the withdrawal of power from one customer for service to another existing or potential customer.

3. Conditions of sale will not be predicated upon proposed use of power by the customer. There will be no regulation of resale rates but contracts with nonpreference customers will require that savings be passed on to consumers.

4. New contracts will state that it is the customers' responsibility to have or secure other sources of power to meet needs in excess of amounts received from Reclamation projects.

5. Power will be disposed of according to the following priority considerations: (a) present commitments, (b) customers who can be served from present facilities and arrangements, (c) customers for whom additional facilities would be required before they could be served. In regard to (b) and (c) preference-type customers have priority over nonpreference customers.

6. Firm power rate schedules will be modified so as to impose restrictions on the amount of power that can be contracted for to allow for future load growth.

Customers who now have contracts for Missouri basin power can renegotiate them so they are in accordance with the new criteria announced by Interior.

REA Completes Changes . . .

. . . in electric program. Administrator Nelsen says reorganization will enable agency to offer better service to borrowers

Aim of recent reorganization of Rural Electrification Administration is to separate electric and telephone programs, to reduce cost of administering the program, and to delegate authority to line people and reduce number of executives reporting directly to the administrator. Administrator Ancher Nelsen spelled out these objectives in announcing changes in the REA setup which went into effect this month.

The first aim was achieved with the appointment of two acting assistant administrators—one to handle the electric program and one for the telephone program. Roy G. Zook was put in charge of the electrification program (EW, Sept. 7, p 73).

This change was followed by formation of new divisions to administer the electric program.

Area Offices Grouped . . . Two regional organizations, designated as the Northern and Southern Regions, have been set up to handle all REA line activities in the electric program. These activities include all relations with distribution type, power type, and locker plant borrowers.

Wade Edmunds has been appointed chief of the Northern Region, which consists of the Northeast, North Central, and Western Area offices. Heading the Southern Region, which takes in the Southeast and Southwest Area offices, is William Callaway.

WILLIAM CALLAWAY

WADE EDMUNDS

Each of the area offices will be supervised by an area director and will be made up of two operations sections, an engineering section, and an accounting section.

The loans and operations activities of each area office will be carried out by the two operations sections, each of which will be responsible for one of ten sub-areas which will correspond to the ten regions formerly used in administering the electric program. Each section will be responsible to the area director for loans and operations work in Washington and in the field.

The engineering section will be responsible to the area director for all engineering activities of the area office in Washington and in the field. And, similarly, the accounting section will be responsible to the area director for all borrower accounting activities including processing of borrower loan fund requisitions and expenditure reports.

Directors of the five area offices are: Ralph J. Foreman, Northeast; Osborne W. Briden, North Central; Chris L. Schultz, Western; Reginald E. Cole, Southwest; and John H. Scoltock, Southeast.

New Divisions Created . . . Two new divisions to handle electric operations and engineering also have been created. The Electric Operations Division headed by J. B. McCurley will be responsible for REA staff activities in the electrification program except engineering. Loans and Management Branch of the division will be responsible for staff activities with respect to loans, general management accounting, retail and wholesale rates, power procurement and insurance. Power Consumption Branch will have charge of staff activities regarding power utilization and power consumption estimates.

Electric Engineering Division will be made up of the Power Generation Branch and Distribution and Transmission Branch and will be responsible for all REA staff engineering activities. The Power Generation Branch will handle all staff engineering for power generation facilities and for line activities with respect to such facilities when requested by line officials. Distribution and Transmission Branch will be responsible for engineering activities for distribution and transmission facilities and for line activities when requested by line officials. The branch also will be responsible for architectural services for both electric and telephone programs.

Joseph O'Brien has been designated chief of the Electric Engineering Division.

Hells Canyon Hearings Will Resume on Oct. 5

Federal Power Commission hearings on development of the Hells Canyon site in Idaho will be resumed Oct. 5 following an eight-week recess.

Opponents of the Idaho Power Co plan for a three-dam development of the controversial site on the Snake River succeeded in gaining an additional delay in the hearing which was originally scheduled to resume Sept. 21 and then was set for Sept. 28 (EW, Sept. 21, p 120).

The extension came after attorneys for the National Hells Canyon Association twice applied for postponement of the hearings until either Oct. 12 or Nov. 9. FPC had denied the postponement motion, referring the matter back to Costello who is conducting the hearing.

First order of business upon resumption of the hearing will be cross-examination of Idaho Power witnesses who presented the company case at hearings conducted in Washington in July and early August (EW, Aug. 17, p 8).

Arkansas Co-op Alters Plan . . .

. . . for building steam plant in state to get around court ruling. New proposal calls for locating station in Oklahoma

Arkansas co-op officials have hit on a proposal they believe will allow them to sidestep the state supreme court ruling which prevents them from building a steam generating plant in the state.

New plan of the Arkansas Electric Cooperative Corporation, which seeks to build a $10.5 million generating and transmission system to serve three Arkansas distribution co-ops, is merely to shift the plant site from Ozark, Ark., across the state line near Spiro in Oklahoma.

Decision Postponed . . . The Arkansas super co-op gained an initial point recently when Rural Electrification Administration agreed to withhold an immediate decision on rescinding the loan which was approved in 1950 by the former Democratic Administration.

As things now stand the Arkansas generating and transmission co-op has until January 17 to show cause why the loan should not be withdrawn. Previously—on Aug. 11—REA gave the power co-op 45 days in which to show why the loan should not be cancelled. The extension was granted after the co-op officials led by Carl Cross, president of the statewide co-op association, made a personal plea to the new Republican REA chieftains in Washington.

With the additional time, Arkansas co-op men hope to complete the details of the proposal for a steam plant to be built on the Oklahoma side of the line.

Adverse Court Ruling . . . As of now, no federal funds have been advanced on the $10.5 million loan approved in 1950 to the Arkansas power co-op. Certificate for the proposed plant was issued Aug. 10, 1951 by the Arkansas Public Service Commission, but was ruled illegal by Circuit Judge Guy Amsler in March 1952. Arkansas Supreme Court upheld the lower court decision in a ruling issued early this year (EW, March 2, p 6.)

Harry L. Oswald, executive manager of the statewide co-op association, said active support for locating the generation plant in Oklahoma has been pledged by the two Sooner State Senators—Robert S. Kerr and Mike Monroney.

It was also noted that two of the three distribution co-ops making up the power cooperative already have lines in Oklahoma. They are the Arkansas Valley of Ozark and Ozark Co-op of Fayetteville. Third member of the power co-op is Carrol Electric Cooperative of Berryville.

SPA Not Involved . . . State co-op officials said that Southwestern Power Administration would have no place in the new setup. It was an interchange agreement between SPA and Arkansas Electric which was the basis for the state Supreme Court decision prohibiting the construction of the co-op steam plant in Arkansas.

But there was a possibility that some interchange agreement could be worked out with the Grand River Dam Authority, a state agency which operates the Grand River Dam in Oklahoma. Under such an arrangement it was thought that the state agency might make use of excess power from the proposed co-op steam plant.

Other Co-ops Are Benefiting . . . Cross, president of the statewide cooperative association, said his association would finance the necessary engineering studies "as an investment to protect our bargaining position." It was argued by co-op leaders that other cooperatives in Arkansas are benefiting from the low power rates "because of the threat of a steam plant."

Clark Hill Power Decision Due

Interior Department is working against a tentative Sept. 30 deadline to set the pattern for disposal of power from federal hydroelectric plants in the Southeast.

Test case is the contract for power sales in Georgia from the Clark Hill plant on the Savannah River. Temporarily this power is being sold to Georgia Power Co under an interim contract due to expire Sept. 30.

Two factors have been injected into the situation which may have a telling effect on Interior's final decision for a long-term contract:

- Senate Interior Appropriations subcommittee has come up with a detailed study of possible alternatives for disposal of the power.
- Former Georgia Governor Ellis Arnall has entered as a special pleader for the rural electric co-ops in the state which have a legal preference in purchasing the Clark Hill power.

Georgia Power for two years has offered a contract which would permit it to purchase the portion of the power and energy allocated to Georgia and transmit it at low rates to customers designated by the Interior Department. It is argued that this adequately protects the preference rights of the co-ops.

Offer Renewed . . . In a recent conference with Interior officials, the co-ops represented by Arnall and D. Marshall Pollock, president of the statewide co-op association, renewed their offer to purchase the Clark Hill power and distribute it over leased lines of the Georgia Power.

As in the past, Georgia Power representatives said they would have no part of a "wheeling" contract under which they would transmit the energy and firm up the supply of power going to preference customers. This type of contract is now in effect in Virginia as well as in a number of western areas.

While the Senate Appropriations subcommittee is for the time being keeping its report under wraps, it is known that the study offers several possible alternatives for disposing of the Clark Hill power under present law.

Outsiders generally concede that Georgia Power is bound to play an important role in final disposal of the federal power in Georgia. This is mainly because it has the only widespread transmission and generation facilities which can economically handle the peaking power to be produced at Clark Hill.

THE ELECTRICAL WEEK
CONTINUED

Final judgment enforcing conviction of General Electric Co by a federal judge on charges of monopolizing the incandescent lamp industry in the United States will be filed Wednesday in Trenton, N. J. GE and eight other incandescent lamp manufacturers were convicted in January 1949 of violating the Sherman Anti-Trust Act. The government's complaint charged the eight firms had combined to assist GE in maintaining a monopoly.

Public Relations—Reddy Kilowatt, Inc, has announced its annual report contest for business-managed electric utility companies. Closing date is May 10, 1954.

IN THE INDUSTRY

The private utilities in the Pacific Northwest have been trying to negotiate long-term contracts with Bonneville Power Administration since 1939, the year after the agency began distributing power from Bonneville Dam.

Now such a contract has been signed by Portland General Electric. All that is required to make it a working agreement is the signature of Interior Secretary Douglas McKay. The term is 20 years, supplanting a five-year contract signed in 1951. It is a model for contracts to be signed by other private companies in the area. Two have already signed: Pacific Power & Light Co and Mountain States Power Co.

What does the first Bonneville compact negotiated under the Eisenhower Administration mean to the investor-owned utilities in the Pacific Northwest? To quote PGE Vice Pres Frank M. Warren, Jr:

"The significance of the contract is the priority clause which assures domestic and rural customers and the diverse commercial and industrial customers of PGE and other private utilities a share of future federal power supply ahead of new large electro-metallurgical and chemical industries."

Here's how this is done:

While the old five year contract was in force, municipals and other public bodies had first call on any energy from BPA plants (the "preference clause"). After that, direct industrial customers took 1,052,460 kw on a contract basis. Then came the private utilities, with 500,000 kw on which to draw. The next 70,000 kw went to firm up industrial customer loads. And finally, any residual power was divided 50-50 between industrial customers and the utilities.

Only One Change in New Contract . . . The new contract has preserved all but this last provision. Now, after direct industrial customers take their 70,000 kw firming power, the private companies will be permitted to draw on the next 1 million kw before any further power is sold directly to industries. From then on additional supplies are to be distributed "equitably between" the industries and the utilities.

Former contracts did not recognize private utilities as holding any residual rights to the supply of federal power. Now private power holds the status of residual legatee to new generation to the extent of parity with industrial customers after delivery to the preference agencies.

In the new contract the resale provision of the old remains. This specifies that the BPA administrator may cancel the contract if he finds the private utility's rates to be unreasonable or discriminatory. But there has been an important addition: In the event of disagreement over resale rates, the utilities now have the privilege of court review of the administrator's cancellation orders.

Not Much More Power Soon . . . How much the private utilities will get and how soon they will get it remains a problem. As things stand, first additional energy coming their way is not expected to arrive until 1958. Peak amount available after service to preference agencies may come in 1960—This may amount to 750,000 kw.

But new guarantees of minimum amounts to be available have been written into the contract. As a BPA spokesman put it, the utilities "are always going to know for five years ahead the minimum amount available, and this can be reduced only on five year notice."

The private companies are waiting anxiously for word from Washington that the new compact has been ratified. There may be a hitch so they are keeping their fingers crossed. Reynolds Metals Co, one of the beneficiaries of BPA industrial power, has asked Interior for an increased power commitment before the contract is signed.

The Republican Administration's approach to the negotiating of the Northwest Power Pool contract appears to have put an entirely new complexion on the private companies' attitude to federal generation in that area.

PGE's Warren commented that now that the private companies had been assured a share of the federal energy supply, they would "vigorously support" new federal projects on the Columbia.

TECHNICAL NOTES
ARCHER E. KNOWLTON

Kilovar output of capacitors varies as the square of the applied voltage. Less is thus available at times of low voltage instead of the more that is desired.

Radio interference, corona loss and reactive requirements may set the upper economic limits for a.c. transmission voltages at values already in sight.

Polonium, a source of neutrons, has a half-life of 138 days.

Pickup current during open transition of power plant auxiliary motors amounts to 5½ to 6 times full load current for 3600 rpm boiler feed pumps and 7½ to 8 times for crusher and pulverizer motors.

Corona occurs at approximately the same critical voltage for d.c. as for a.c. (peak) but the losses increase thereafter with rising voltage much more rapidly with a.c. than with d.c. For comparable corona loss the d.c. voltage can be 10 to 20% higher than a.c.

Push-pull methods of resuscitation on the pole-top are in general 50% more efficient in pulmonary ventilation than the conventional method.

"I hand-weld the hanger brackets to the tank, so I know the POLE STAR will stay on the pole," . . .

says **RALPH CASPER**
POLE STAR WELDER

Pole Star transformers for pole mounting are available in all standard sizes from 3 Kva through 100 Kva, and in voltages up through 14.4 Kv.

When a Pole Star transformer is hung on a pole, we want it to stay there. That's why we hand-weld the hanger brackets to the Pole Star tank. Since the hanger brackets carry the full weight of the transformer at all times, we carefully weld completely around the edge of the bracket flange. Absolutely no crevices are left which could remain unpainted and where moisture could enter and cause rust. As a matter of fact, the welded section is stronger than the tank and is positive assurance that when a Pole Star is hung on a pole, it's there to stay.

Let the POLE STAR be your guide

Product Of Long Experience — Safe Thrifty And Reliable

PENNSYLVANIA TRANSFORMER COMPANY

A McGraw Electric Company Division

CANONSBURG, PA. • *Greater Pittsburgh District*

G.E. starts delivery of 66 giant breakers to guard the nation's first 330-kv lines

A huge 80-ton steel-clad circuit breaker—that can shut off in 1/20 of a second more electrical energy than any other breaker in present use throughout the world—will shortly take over the job of protecting the 330-kv transmission system of American Gas & Electric Company, the country's first.

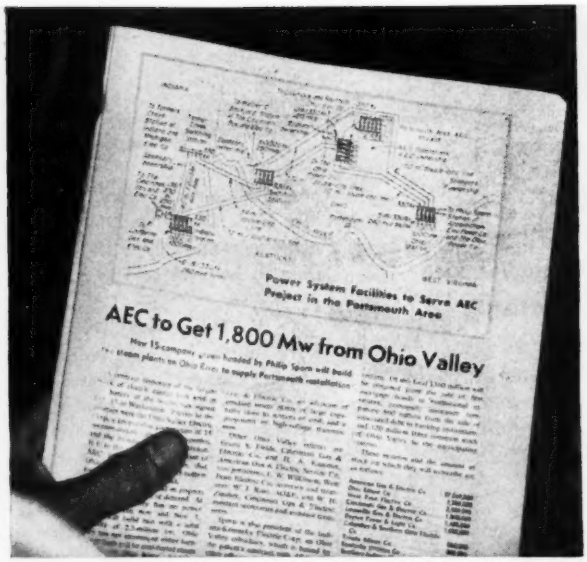
With its three characteristic lens-shaped tanks, the new 330-kv impulse breaker was shipped from General Electric's High Voltage Switchgear Department in Philadelphia to Beverly, O., for the Muskingum River Plant of The Ohio Power Co., an operating company of AG&E. The unit, 25 feet high completely assembled, is a forerunner of 16 gigantic 3-pole G-E breakers in the AG&E System.

First developed by G.E. 20 years ago, the time-proved impulse oil blast principle has been applied to the new family of breakers in the 138-kv to 330-kv range. This breaker design has withstood 2000 interrupting tests at G.E.'s new high capacity Switchgear Development Laboratory during the year preceding shipment—plus 40,000 electrical tests for best operation under all possible conditions.

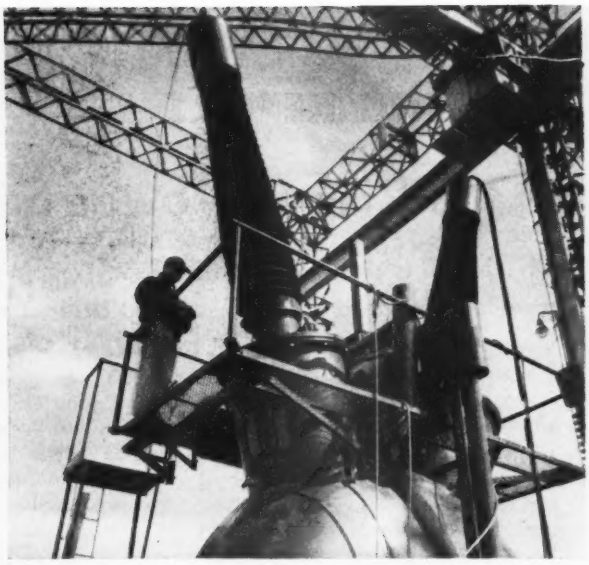
G.E. is building 66 breakers, for various purchasers, capable of interrupting up to 25,000,000 kva, all for new 330-kv systems. These steel-blue giants, standing guard over the high-power lines, represent the vision and enterprise of the nation's electric utilities, coupled with the creative research and design which made the breakers possible.

General Electric Company, Schenectady 5, N. Y.

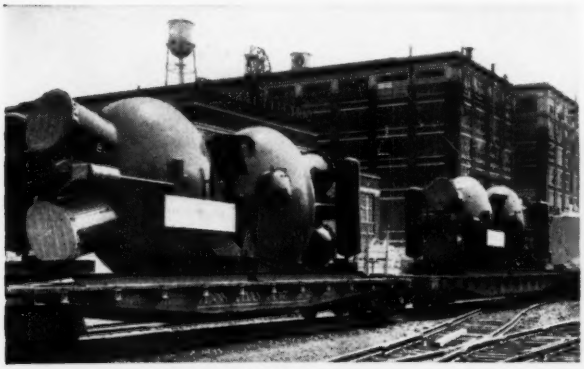
872-6



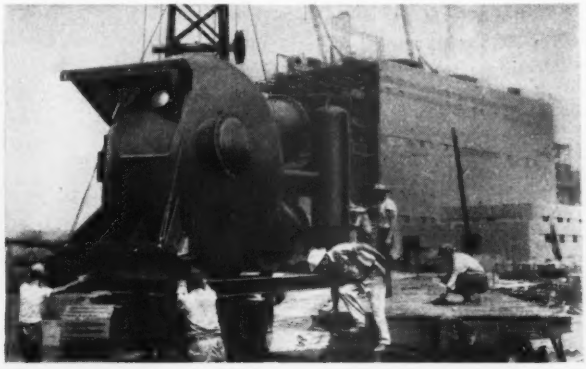
1. PLANNED from the beginning. General Electric engineers developed a breaker capable of controlling and protecting the large blocks of power to be handled by AG&E's new system.



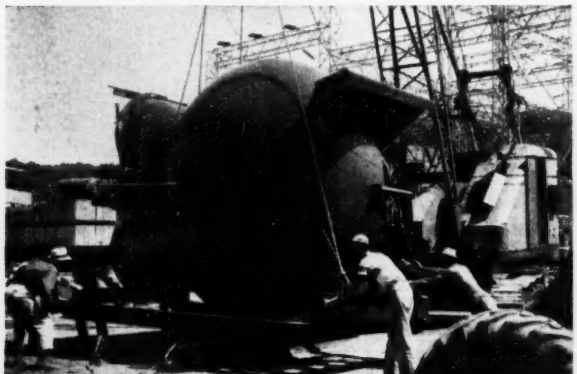
2. TESTED for interrupting performance at Switchgear Development Laboratory in Philadelphia. these new breakers meet all specified requirements. 2000 development tests were performed.



3. SHIPPED from G.E.'s High Voltage Switchgear Department in Philadelphia, these "giants" had to be laid on their sides on flatcars to meet railway clearances.



4. UPON DELIVERY at Muskingum, crane lifts last tank, with shipping cradle attached. Under construction in background is the AG&E Muskingum River Plant.



5. LENS-SHAPED TANK, moving across field for placement, is formed from two seam-welded flanged domes. This design can withstand extremely high pressures, keeps volume to minimum.

6. ONE TANK in position, another going up. Each has a 3550-gallon oil capacity. Installation of six breakers is scheduled for completion this year at the Muskingum plant.

You can put your confidence in—

GENERAL ELECTRIC

MEETING REPORT

43% Rise in Power Sales . . .

. . . by '58 is predicted by Tomlinson Fort, Westinghouse vice president, in speech before Maryland Utilities Association

"Our present forecast for 1958 is that total customer kilowatthour sales will be 43% higher than 1952, industrial sales to be up 35.6%, commercial sales to be up 37.7%, and residential and rural sales to be up 63.0%." This prediction was made by Tomlinson Fort, vice president, Westinghouse Electric Corp, before the annual fall conference of the Maryland Utilities Association held Sept. 18-19 at Virginia Beach, Va.

Looking at the probable conditions in 1958 with respect to 1952 and projecting a trend on to 1963, Fort predicted that the Federal Reserve Board Index of Industrial Production for 1958 would be 14.6% higher and for 1963 would be 26.9% higher than 1952. Gross national product would be 24.8% and 33.1% higher, and disposable income would be 23.4% and 27.7% higher for the respective years, he estimated. Total customer power sales will be 103.0% higher in 1963 than in 1952, he said. "On the basis of these forecasts, it looks like a good future," Fort declared.

Reasons for Optimism . . . In discussing reasons why Westinghouse believed that "the nation and the utility industry will continue onward and upward after a readjustment rather than fall flat on its face as a result of a severe depression," Fort pointed out:

1. The American economy is basically strong enough to consume what it can produce.

2. There are the so-called "built-in" devices (unemployment, mortgage and deposit insurance, installment mortgages) protecting the nation against a serious economic down-turn.

3. Business and state and local governments have plans for capital expenditures immediately ahead which should sustain a relatively high and satisfactory level of business.

4. The kind and amount of research being carried on is resulting in better methods, materials and products.

Developing Leaders . . . Virgil K. Rowland, personnel assistant to the secretary and general accountant, Detroit Edison Co, told the conference that improved management techniques can be taught, learned and checked. He pointed out the four areas of management development as:

1. Individual evaluation, used to improve present employees on jobs today.

2. Higher management control, used as an inspection technique of subordinates.

3. Appraisal interview, used to get information back to person evaluated.

4. Cumulative knowledge of techniques used to help an employee improve.

Kenneth W. Haagensen, director public relations, Allis-Chalmers Manufacturing Co, declared that it is necessary to understand people and to sell an idea rather than tear down the other person's idea. He said that everybody sells either services and products; but it is easier to be negative and that is our fallacy—having a negative attitude. He urged companies to take a positive attitude, to talk and to merchandise an idea; to throw off the negative side; and to sell the American way of life.

New Zealand's Biggest Power Station

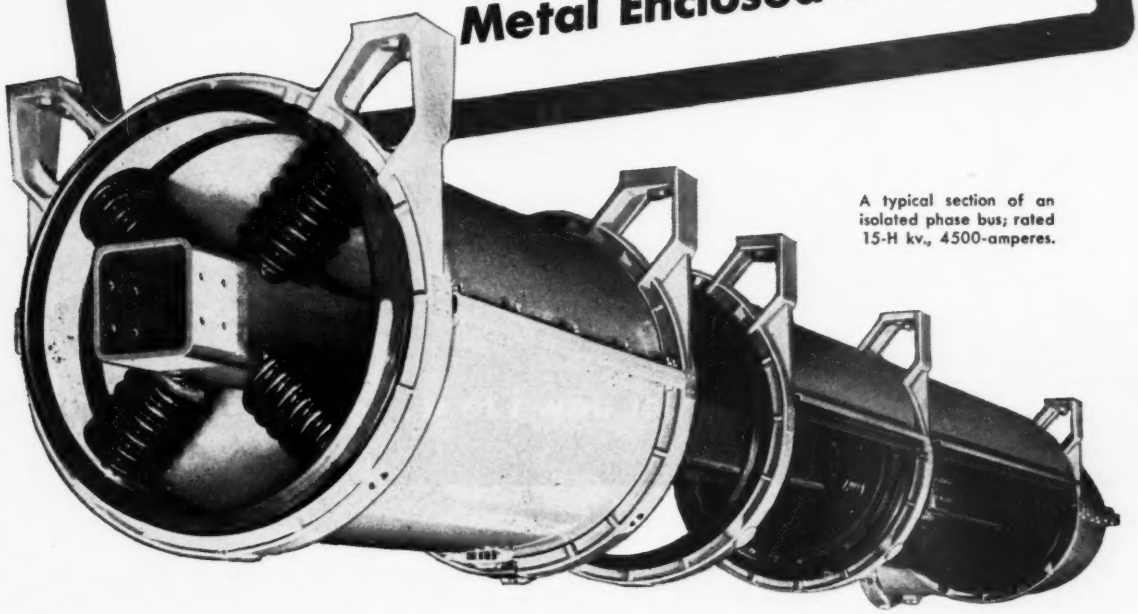
New Zealand's recently completed Maraetai hydro project (above) is the country's largest power producer. Three units with a capacity of 36,000 kw each are in operation and two more now are being installed.

Maraetai station is situated 22 miles upstream from Arapuni in a deep gorge of the Waikato River. It is the third of a chain of stations being developed on the Waikato.

Geological formation of Maraetai site is of volcanic origin. Rock is welded tuff in three horizontal sheets. It is extensively jointed by contraction fractures and properties of rock vary considerably with depth so much so that three sets of values have been adopted for design purposes.

Because of the jointing in the rock, cement grouting has been a major operation at the site for consolidating foundations and the formation of cut-offs to prevent leakage under and around the dam. Grout curtains have been extended 200 ft into the rock below the lowest dam foundation level and 1,000 ft into the country horizontally from the abutments.

A DIRECT PATH TO BETTER PROTECTION with DELTA-STAR Isolated Phase Metal Enclosed Bus Runs



A typical section of an isolated phase bus; rated 15-H kv., 4500-amperes.

DELTA-STAR METAL ENCLOSED BUSES ARE AVAILABLE FOR ALL REQUIREMENTS

"Unit-type" metal-enclosed bus designs are available in a wide variety for isolated phase, segregated phase and non-segregated phase construction. Delta-Star's experienced engineers will make an analysis of your proposed installation and determine which type will be the most economical for your service requirements. Regardless of the type selected, you are assured of a design which will fit into your installation at lowest possible erection cost.

For complete information ask for Publication 5006.

Here is the safest direct path between generator and station bus or transformer. Absolute isolation of each phase eliminates the possibility of a phase to phase fault.

Phases individually isolated and enclosed. Bus is supported within heat treated cast aluminum rings by porcelain insulators which are always placed in compression both under normal load and in event of short circuit.

Aluminum Covers in identical halves with silvered channel shape edges provide strong sections for bolting and good electrical contact between halves. Specially shaped neoprene gaskets eliminate dust and moisture. Large area ring gaskets permit liberal misalignment of ducts without reducing seal. Covers easily removed for inspection.

Easy to Erect — Simple to Install. Every structure is custom built to meet specific requirements, factory engineered, factory assembled and factory tested before shipment thus reducing installation cost to a minimum.

FOR COMPLETE DETAILS write or call our nearest district representative or our main office.

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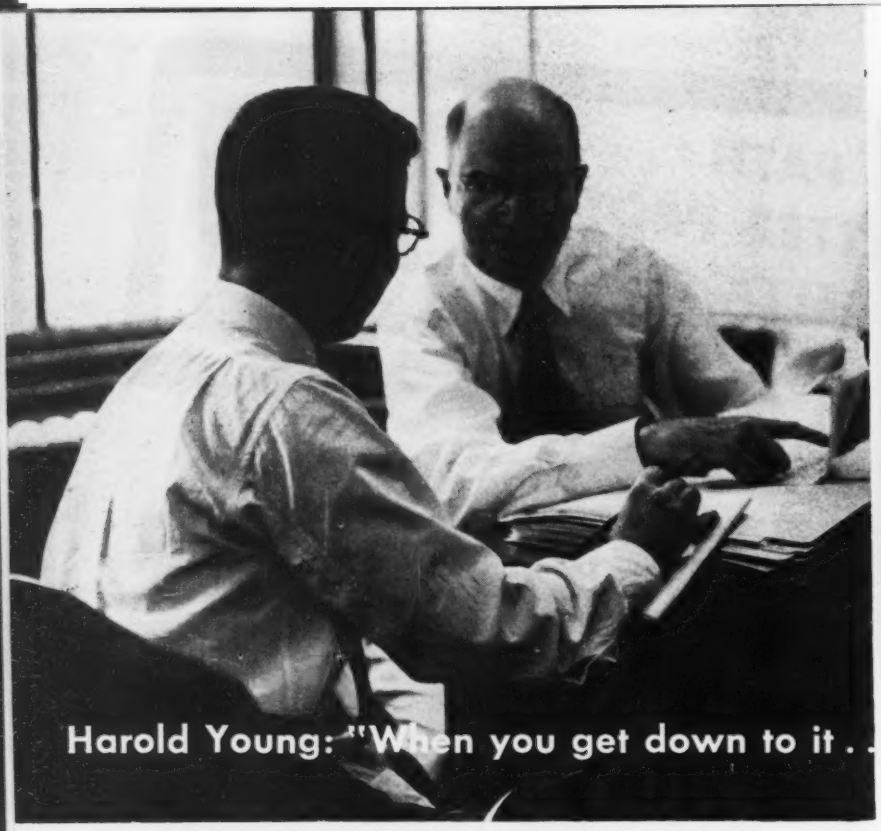
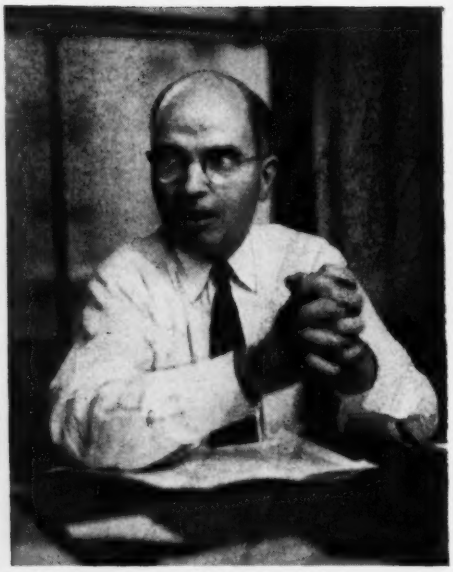




Harold Young: "When you get down to it . . . everybody works for . . .

Financial Analyst on the Utility Beat

If you were going to float a stock issue of several hundred thousand dollars a good man to convince of your company's worth would be Harold Young.

Harold Young is the man who evaluates utility stocks for Eastman, Dillon & Co, New York investment house. He's the man who writes the company's "Bulletin on Current Developments in Utilities." He's the man who contributes biweekly articles analyzing utilities to Investment Dealers' Digest. He very likely knows more about your company than you do.

Because he has to. Because it is the only possible way for him to speak with authority when he is advising his company, his clients and his readers on a safe utility in which to invest their money.

"I try to give them more in the Bulletin than they can get in the routine news services," Young said recently. "And the best way I know to do that is by visiting the companies I'm writing about. I've averaged about 10,000 miles a year since 1945 doing it."

Business Is Pleasure . . . Young even vacations with the utilities. He schedules his summer holidays in different parts of the country, visiting companies as he goes.

"Mrs. Young and the girls—they're 14 and 18 now—like travel and people and getting around as much as I do, or I wouldn't be able to do it," he says. Last May, with a call on Avery Schiller, president of Public Service Co of New Hampshire, Young finished visiting one utility in every state in the union, throwing in one in Mexico and the District of Columbia to boot. His daughters are racking up a record, too—they've been in every state except North Dakota.

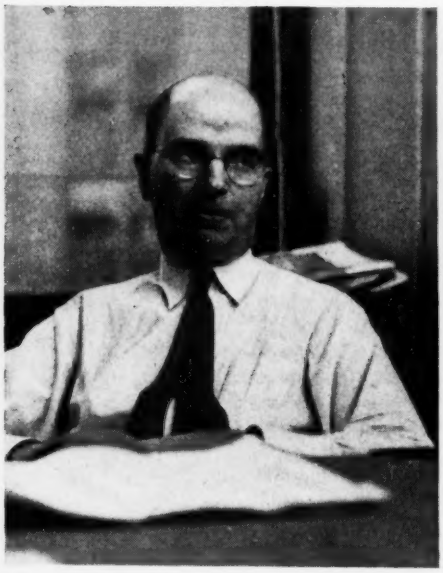
The companies are glad to see the junketing Youngs and go out of their way to make their stays pleasant. That has included boat rides to survey coastside utilities, day trips and sightseeing outings and even—in one case—a private plane ride from Newark Airport (the Youngs live in Bronxville, N. Y.) to the territory of Southwestern Public Service Co in Amarillo, Tex.

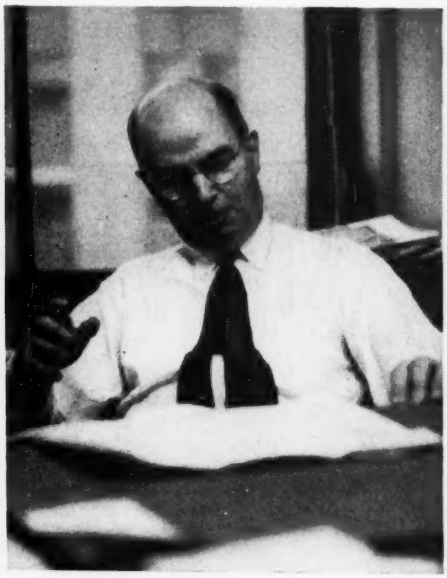
Roughest time Young had on any of his field trips came as a result of a desire to see a large open pit mine at Silver City, N. M., served by Community Public Service.

"I got off the Santa Fe sleeper at 5 a. m.," he says, "and spent the whole morning getting to Silver City on a mixed train of passenger cars and empty ore cars. There were on the whole train three passengers beside me. I enjoyed the visit, though."

Young says he likes to do a firsthand reporting job on the companies —"go see 'em, call 'em up." That way he finds he gains the confidence of the men in the industry. And having gone out and seen the men who make it tick, he finds it much easier to talk to them on the phone later, when he needs some specific information.

How it Started . . . His newsletter, which the company puts out in 1,500





the electric companies . . . Demand must go up . . . expansion will go on"

to 1,800 lots, got started in a roundabout way. Another utility analyst who was giving a course in public utilities at the New York Institute of Finance was drafted in 1944. Young agreed to fill his place while he was away. The procedure was that the "prof" analyze one particular company a week, then summarize the utility financial scene for that week. When the other analyst returned from service, Young stepped aside for him. But the Institute asked him to come back and give a course on weekly developments in the utility industry. Young agreed, and in addition began digesting his lectures in a news sheet for Eastman, Dillon.

"Pretty soon," he says, "the sheet became the dog and the lectures the tail. So I gave up the lectures and concentrated on writing up the utility news. Now I consider this the most important contribution I make."

When the service began Young says, the big interest was in the holding company breakups. Securities and Exchange Commission hearings in Philadelphia provided much of the information, so he would go down there once every two weeks to dig information out of the transcripts. That way, he got to know a good number of utility lawyers around Wall Street and people in the holding companies. Gradually he was able to get his news on the spot from developing his contacts.

Young always ties visits to companies with trips he makes around the country calling on customers or giving speeches. And on these trips he also works in aggressive selling of utility stocks for his company.

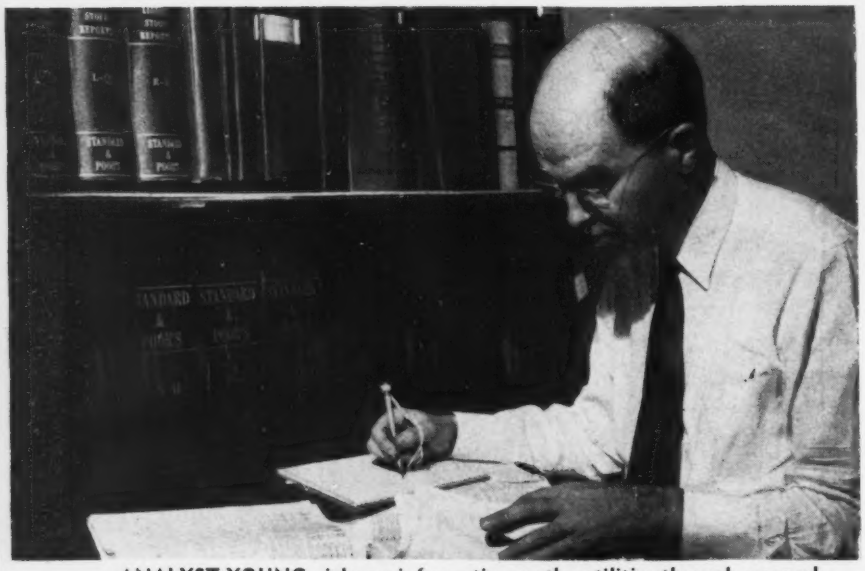
About the same time he started lecturing before the Institute of Finance, he began writing articles every other week for Investment Dealer's Digest. He reports on a different utility in each article, which he writes on a free lance basis from material he's collected from the company by mail. He has covered pretty nearly every utility that's sold over-the-counter. Though they've helped make him well known across the country, the articles, he says, are "strictly a sideline for me." He also serves as guest editor for the Digest's Public Utility Survey.

Early Interest . . . Harold Young became interested in finance, if not specifically utility finances, early in life. Born in Laconia, N. H., May 30, 1903, he took up business administration at Brown University, where he received his bachelor's degree in 1923. Two years later Brown awarded him a degree of Master of Business Administration. From there he went into the investment business, joining the Providence, R. I., firm of Bodell & Co in the statistical department.

"Bodell was interested in utilities from the start," he said. "His customers would criticize him for offering 'speculative' utility stocks rather than 'good sound industrials.' They've changed their minds, now."

At Bodell, Young got a good background in finance, including utility, from that time until 1943, when the firm folded. He came to New York that summer to enter Bear, Stearns & Co, and has been working in nothing but utility stocks ever since. He was hired by Eastman, Dillon in 1945 and became a partner in 1948.

With Young practically living the utility business, his wife and daughters have had to get interested in it. ("They've had no alternative," he says wryly.) His older daughter, Leanna, gets into hot debates at Smith College on the private power-public power feud. "Government ownership is anathema to her," Young says. Leanna's debates even carried over into the summer vacation. She wrote



ANALYST YOUNG picks up information on the utilities through research . . .

. . . through vacation junkets with his family and field trips . . .

. . . and by keeping abreast of the news ticker in the home office.

home from Europe that she'd got into "quite a discussion" on free enterprise on the ship going over.

Predictions . . . Steeped as he is in utility facts and figures, Young must have some ideas about the future of the business. Would he be willing to talk about them for EW?

"Well, for one thing, I see no general change in the construction program. You need money for expansion, and money is going to cost the utilities more. I can't conceive of a situation in which the companies can not raise money if they pay for it. But they'll have to pay for it."

But won't there be a slackening as the power companies begin to catch up with demand?

"No, I don't think so. The companies all say they've got to build to keep ahead of the growth they've actually seen in sight. A lot of them wish they weren't growing so fast—wish they could take a breathing spell. But they don't see a breathing spell.

"After the war, the utilities were all filling a vacuum, catching up. They built almost no generation during the war. Lots of people thought things would get back to normal.

"But even now I can't see any real abatement in expansion, because of the increased use of electricity, for a number of reasons:

"1. Residential. People can't get domestic help, they have to use appliances.

"2. Commercial. Competition is a big factor—one store gets air conditioning, so the next store has to get air conditioning. And the load goes up.

"3. Industrial. You have to use more labor-saving devices to keep up. And that means more power.

"When you get right down to it, everybody works for the electric companies. Demand is bound to increase."

Missionary . . . From talking to Harold Young, you get the idea he's pretty thoroughly sold on the utilities. And when he gets sold on any one company, that company is likely to find its own selling easier.

His wife tells how she once caught up with the whereabouts of an old boy friend, and found out he was a missionary.

"I don't know if my life would have been very different if I'd married him," she says, "because I married a missionary—a missionary for the public utilities."

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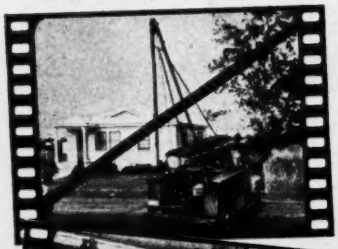
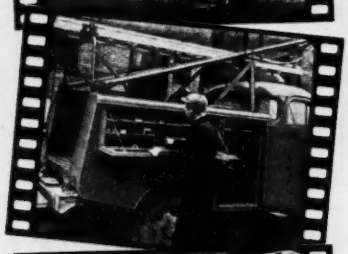
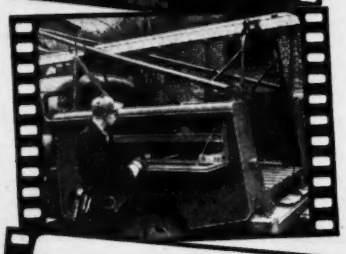
This Versatile Body is the STAR OF THE FIELD

A leading performer in supporting roles, too!







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Series 350

LIGHT DUTY MAINTENANCE BODY

Utilities everywhere award the Series 350 an "Oscar" for efficiency. This versatile unit enables a two-man crew to perform maintenance and installation work normally requiring additional men and vehicles. The compact, fold-over derrick sets 40′ poles—a job which would otherwise require costly heavy-duty equipment. There's a 24′ ladder which can be quickly erected for overhead work. Compartments are equipped to carry tools and materials for many service operations. The under-floor winch is always ready to use—without moving material load. No wonder the Series 350 has been acclaimed "the most versatile performer in the field."

more utilities use POWERS-AMERICAN bodies than any other make

CLIP THIS COUPON and attach to your letterhead

McCABE-POWERS AUTO BODY COMPANY, 5901 N. Broadway, St. Louis 15, Mo.
Please forward details on SERIES 350. *Also send information on the following:*

- ☐ LINE CONSTRUCTION BODIES
- ☐ GENERAL SERVICE BODIES
- ☐ REVOLVING AERIAL LADDERS
- ☐ WIRE REELS
- ☐ POLE TRAILERS
- ☐ HYDRAULIC TOWERS
- ☐ _____
- ☐ _____
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Name _____

Company _____

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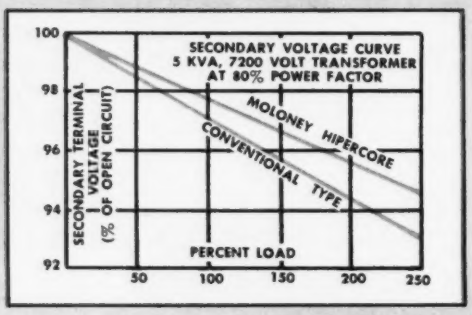
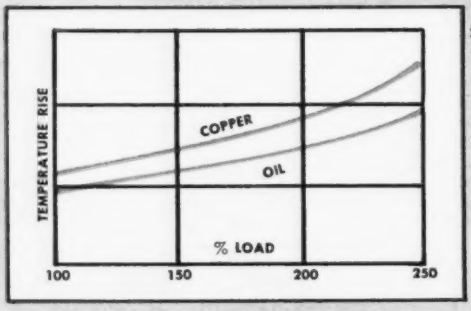
City _____ Zone _____ State _____

EXTRA



BETTER VOLTAGE REGULATION — Voltage Regulation is an ever-present operating problem. Peak load and off-peak load conditions must all be handled with minimum installed capacity. The smaller cores of HiperCore Transformers make possible windings having lower impedance. Lower impedance provides lower voltage drop at all loads. Improved voltage regulation is the result.



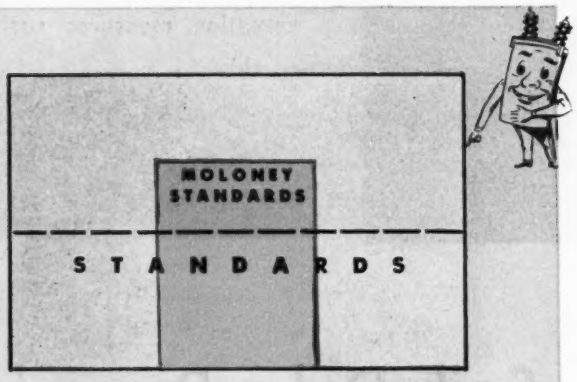
HIGH SHORT TIME OVERLOAD CAPACITY — Moloney HiperCore Transformers show to advantage when excessive overload conditions exist. Overloads may be of several hours duration. The deteriorating effect of high winding insulation temperatures shortens the life of transformers. HiperCore Transformers maintain a lower hottest-spot-over-oil temperature thus reducing the deteriorating effects such conditions impose on winding insulation.

MOLONEY ELECTRIC = BETTER PERFORMANCE, GREATER RELIABILITY, LESS MAINTENANCE

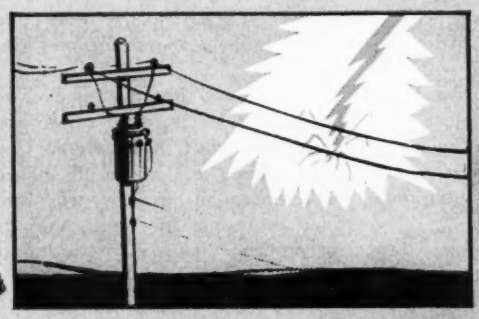
SALES OFFICES IN ALL PRINCIPAL CITIES

CAPACITY!

HiperCore TRANSFORMERS



HIGH FACTOR-OF-SAFETY IN DESIGN—Moloney's years of experience in the exclusive manufacture of transformers provide an enviable background which enables their engineers to design into the product a PLUS factor-of-safety. It has been a Moloney policy, which has proved mutually beneficial to both user and manufacturer to maintain a high factor-of-safety in the design of the HiperCore Transformer.



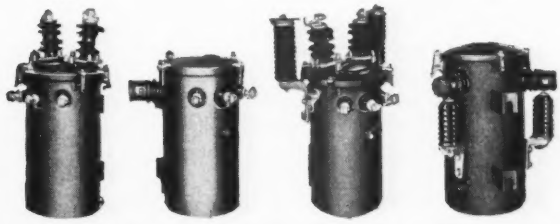
HIGH SURGE INSULATION STRENGTH—HiperCore Transformers, because of their "Surge-Proved" design, are highly resistant to the effects of switching and lightning surges. Exhaustive surge tests and years of design experience have enabled Moloney Engineers to develop a uniformly high insulation level throughout the entire HiperCore Transformer. This design has been proved by many years of successful operation.

The beak of the pelican, they say, can hold more than his belly can—which is extra capacity for the pelican's system. Your distribution system needs extra capacity too . . . the extra capacity to handle overloads, and to function dependably in any kind of weather. And that is the type of extra capacity that is engineered and built into each and every Moloney HiperCore Transformer.

The famous HiperCore wound core construction gives better performance, and results in a more compact, smaller transformer. The extra capacity of HiperCore design can give your system that *extra* margin of safety so important with today's increasing loads.

When you select transformers . . . *look for the extras.* Consider *proven performance . . . consistent quality . . . extra dependability.* Consider *everything* and you'll make it *Moloney all along the line.*

ME53-37



Moloney HiperCore Distribution Transformers are available in all standard ratings from 3 Kva up in both Conventional and CSP designs.

MOLONEY ELECTRIC CO.

Manufacturers of Power Transformers • Distribution Transformers • Load Ratio Control Transformers Step Voltage Regulators • Unit Substations

FACTORIES AT ST. LOUIS 20, MISSOURI AND TORONTO, ONT., CANADA

For the public, Wateree Lake is visible evidence of a Southern utility's watershed management plan. Behind the scene are conservation measures such as this

Water, Forests, Soil: Duke Power's

A well defined program of land utilization, forestation and soil improvement is providing Duke Power Co with a profitable by-product and at the same time adequate protection of its water resources for hydroelectric power production.

Essentially the land program is watershed management for protection of the company's hydro reservoirs and power operations. But it is getting the more than 200,000 acres of land to pay big dividends in forest products, profitable farming, community development and a source of recreation for the public.

In the early development of water power the company, like many others, purchased the land for its dams and reservoirs and sufficient for a watershed. Farms that could remain in production were rented for what they would bring. Most were abandoned and nature allowed to take its course. But nature does not always cover its scarred spots adequately before erosion has cut deep gullies and lessened the value of reservoirs with a heavy coating of silt.

Began 14 Years Ago . . . Back in August 1939, Duke Power made a survey to see what could be done toward better land management to enhance its forest and hydro resources. A start was made with two divisions, one to deal with farm lands and their rental, and the other with forestry. By 1945 things had progressed to a point where forestry comprised 90% of the land utilization program.

The two departments were then combined better to promote the land utilization program. Heavy equipment was moved to the better farm lands to terrace and improve the soil. These acreages were then rented to farmers who were given technical assistance for profitable farm operations. Advantages gained were that the communities were helped by keeping good farms in cultivation.

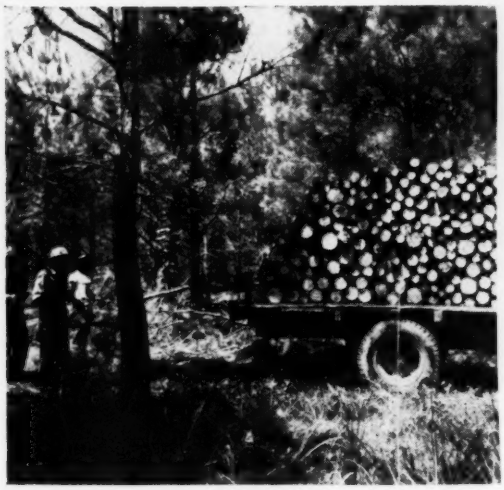
The company has about 20 such farms under improvement at the present time, 12 of which are in the 300- to 400-acre class. Through good farming practices wheat yields have been increased from 12 bushel to 35 bushels, even in last year's severe drought. Corn yield has been upped to 135 bushels, about ten times average yield.

At the same time the company retired about 10,000 acres of wornout farm land which had suffered from sheet erosion and was badly gullied. A reforestation program was instituted to restore the lands, stop the silt problem and work toward profitable forest production.

Obtaining pine seedlings from state nurseries in North and South Carolina, the company set its own crews to work with mechanical planters. It supplemented this program by providing employment to local farmers to set seedlings out by hand.

In addition the company contracted to have trees planted so as to speed the reforestation program.

Trimmings from pine trees grown to protect watershed are hauled away for pulpwood . . .



. . . while in another part of the forest seedlings are planted to prevent soil erosion

Land Program Preserves All Three

Interest Grows . . . The tree planting activities developed a great deal of individual and community interest. Farmers were making extra income during off-planting seasons and became interested in how they could apply the practice to their own lands. State agencies along with community committees saw the long range good that would accrue. And the company was working hard toward preserving the rainfall and having clearer water in its reservoirs.

Cost was comparatively small. Trees cost about $2.50, and labor in planting about $7.50 per acre. Cost in some areas ran a bit higher, but the overall average is between $11 and $12 an acre planted.

Tree survival is as high as 85-90% with 7x7 foot spacing. Because of the high tree survival it is estimated that 8x8 foot spacing would be better on both level ground and slopes.

The aggressive reforestation program, along with forestry management practices, has returned good dividends to Duke Power. From 1940 to the end of 1951 the company cut 71 million board feet of timber products. In the past ten years a total of 132,000 cords of pulp wood was cut. Production of both pulp wood and timber will increase progressively as the program gets under full operation and rotation planting becomes a scheduled affair. Thinning operations will allow present timber stands to grow at a faster annual rate with higher yields of lumber.

While Duke Power's forestry program is on a system-wide basis, it operates as a community affair also. The small sawmill operator has an equal opportunity with the big fellows. Timber stands are cruised and the trees cut as marked. While sealed bids are asked on stumpage, the talley on lumber cut is made at the mill.

In addition to preserving the watershed, the forestry program is providing a substantial amount of work and income to local commerce and producing needed pulpwood and lumber.

Idea Catches On . . . Seeing what the company has done on its own lands, neighboring farmers are actively engaged in their own soil conservation and forestry practices. Duke Power officials believe it is not enough for the electric utility to just do its own forestry and soil conservation if full land utilization is to be achieved. The work must extend throughout the entire watershed. So Duke Power experts are ever ready to help the farmers and others in the communities to achieve the goals.

In its demonstration farm program Duke Power is taking the leadership in more profitable farming. Entire farm acreages have been remodeled and revitalized by soil conservation methods and the plowing under of cover crops to increase the productivity of the land.

The company has seven main farm agents who live in the communities

LOBLOLLY PINE planted in 1941 is thinned by a company team. About 11,000 acres of these trees have been planted on the watershed of the Catawba River in Duke's territory

and there are three assistants. All technical assistants work out of company headquarters, where the overall program is directed. Field men are necessary to handle the reforestation problems and for fire control, which had been a severe problem in past years.

It has been an age-old custom of southern farmers to burn off the fields and nearby forest to kill the boll weevil. Of course this destroyed the forest and killed all young growth and in many instances large-scale forest fires developed with millions of dollars in loss.

Working with federal and state agencies Duke Power has carried on an extensive educational program among farmers against the practice of burning off land, and with splendid results. Farmers have ceased to burn the fields and woods, and hunters and fishermen are more cautious with fires. Result is fewer forest fires and the annual fire losses are now under 1% of total forest area.

Fire Prevention . . . The fire control problem is important to Duke Power because of its large forest areas and many hydro plants. The company maintains crews and equipment at Great Falls, S. C., who protect three dams and five plants on the Catawba; at Mount Holley, N. C., to protect the upper Catawba River where there are four dams and plants and one undeveloped area of 30,000 acres in the North Carolina section of the territory.

There is a crew at Morganton, N. C., which protects property from Marion down to Hickory, an area having two dams and plants and two undeveloped areas. A crew at Calhoun Falls, S. C., and one at Starr, S. C., both on the Savannah River, look after those long stretches of timber land.

Fire Fighters . . . Fire fighting crews are recruited in the immediate areas and trained in latest methods.

Duke Power has recently started a new phase in its farming program which is important in the trend of southern agriculture. Because the cost of farming has increased sharply in recent years and the labor supply has dwindled, many farmers are turning to grass operations and the raising of dairy and beef cattle. In this respect both good and unprofitable acres can be planted to profitable cover crops for grazing.

Duke agricultural specialists are encouraging farmers in this respect and providing a demonstration farm to gauge such practices. On one of its improved farms at Sherril's Ford, west of Mooresville, N. C., the company has constructed ponds and improved pastures and has a herd of 17 registered Herefords.

In a few years the herd will be increased up to the maximum the farm will sustain and surplus stock disposed of to local farmers to increase the strain of cattle in the area.

Electrical Tie-In . . . The work of the forestry department in soil conservation and farm demonstration ties in well with the program of the company's agricultural engineers who promote utilization of electric power on the farm for better production and more profitable farming operation in the area.

The coordinated efforts are proving highly successful and winning friends for the company.

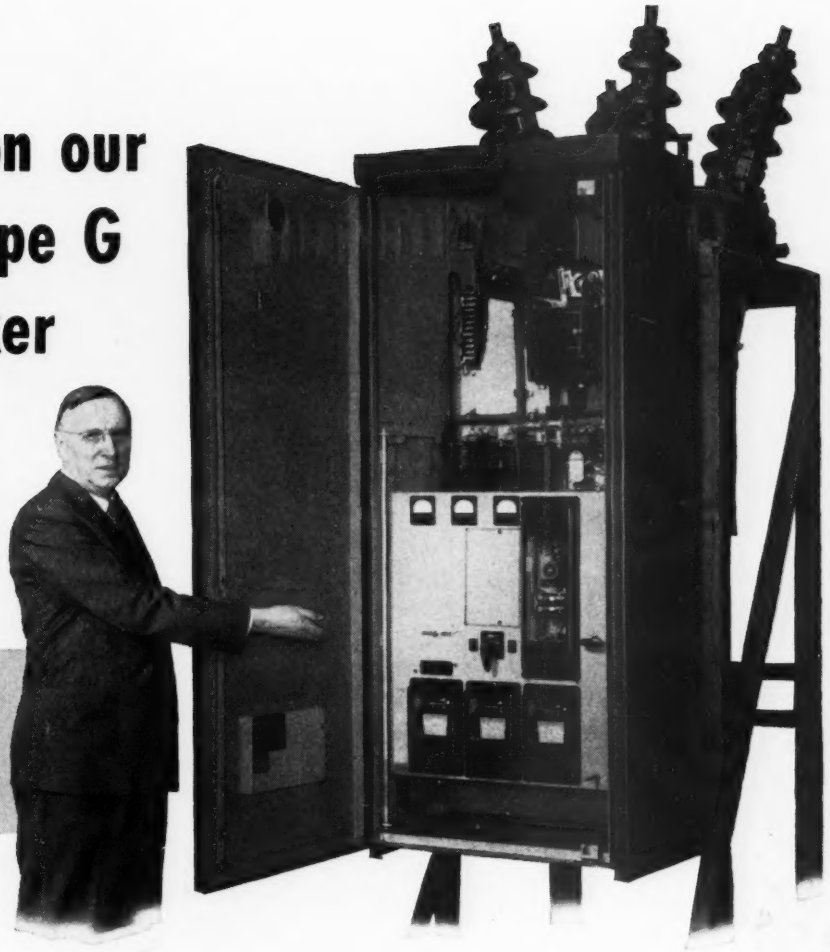
Government power agencies have long promoted the recreational opportunities at hydro reservoirs much more than the privately owned electric utilities. However, with the public becoming more outdoor-recreation conscious the utilities are faced with new problems.

Recreation for the public . . . Duke Power has a long string of reservoirs which have been made crystal clear as a result of its watershed management and reforestation program and these are tempting recreational areas. Two of its lakes, in North Carolina, Catawaba with about 170 miles of shore line and Hickory, with about 100 miles, have been opened to the public for recreational purposes. About 1200 lakeside sites have been leased so far with additional areas set aside for general public use providing access, convenience, and as much safety as possible.

A third lake, Wateree in South Carolina, has also been developed for public use (see picture at start of article). There the 70,000-kva Wateree project backs up water 20 miles. The company has installed cottage sites and a number of public landings for use of sportsmen.

Duke Power officials believe that its program has been of great benefit to the people as well as the company. It is providing continuous forestation, conserving the soil, protecting its water resources, thus helping farmers and public alike.

More facts on our advanced Type G Power Breaker



Proved for service after three years of exhaustive tests

The new Westinghouse Type G breaker has been built on advanced principles to give you the cleanest, simplest package-reclosing breaker in the distribution class. As with all Westinghouse breakers, tests in the High Power Laboratory have verified its service ratings—14.4-23 kv, 600-1200 amps, 100-250 mva.

Simpler, cleaner design—The single-tank design, so successful in our B-line indoor breakers, is now available in medium-size outdoor breakers. Each phase has one interrupter and one moving contact instead of two. It's a simpler, more modern design that's easier to maintain. And it has been conclusively proved in hundreds of High Power Laboratory tests.

Everything in one housing—Solenoid mechanism, rectifiers, control relays, reclosers, protective relays, meters, instruments are all in a single housing. The hinged relay panel gives ready access to all wiring. There's only one housing to heat, only one close-fitting door to open for inspection.

Built like a big breaker—This new breaker has all the famous Westinghouse big breaker features: Solder-sealed condenser bushings, magnetic De-ion® grids, Micarta® lift rods, heavy-gauge steel tank, mechanically trip-free solenoid mechanism.

Get more facts—If you want information on this outstanding new breaker, call your Westinghouse office or write for descriptive folder B-5834 and engineering bulletin DB 33-745. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-60799

YOU CAN BE **SURE**...IF IT'S

Westinghouse

Helping the industry meet its growing loads

Solved: A long-time problem in high-voltage switching

A low-cost switch to *safely* interrupt load currents on high-voltage transmission lines has long been the need of utility engineers. Conventional disconnects are not suitable for this job because of the ever-present danger of an unconfined arc causing a fault.

Now, after a great deal of interesting research, Westinghouse engineers have developed the VLB switch which not only safely interrupts load current, but also line-charging currents and transformer magnetizing current.

The VLB switch is essentially a standard disconnect with the addition of a small interrupter chamber. The interrupter chamber, permanently sealed and gas filled, houses the contacts which are the current interrupters. These contacts are actuated by a quick-break mechanism which, in turn, is tripped by the main switch blade as it rises, after being released from the stationary contact jaws.

Development of the VLB switch was complicated by the factors that had to be considered—weight, size and cost. These requirements were met by the use of sulphur hexafluoride, SF_6, halogen compound gas, with an arc interrupting ability *100 times better than air*. Less than six inches of contact separation are required in SF_6 at atmospheric pressure to interrupt 115-kv circuits. Interruption is further improved by application of the De-ion® principle: small puffers blow fresh un-ionized gas through the arc when the contacts open.

The great expansion in today's power systems makes the new VLB switch all the more timely. It is another good example of constant efforts by Westinghouse to provide the utility industry with quality equipment designed to help solve operating problems.

J-97175

YOU CAN BE SURE...IF IT'S
Westinghouse

The intriguing properties of sulphur hexafluoride

The superior dielectric qualities of many of the halogen compound gases have become known to science during the last 15 years. Of particular interest to Westinghouse scientists is sulphur hexafluoride (SF_6) which is extremely stable and inert, remains a gas down to comparatively low temperatures (-62°C at normal pressure), and is comparable with oil in dielectric strength at only 30 pounds per square inch gauge pressure. Using these known qualities, it wasn't long until the engineers discovered, with the aid of a small test interrupter, that the currents which could be interrupted in SF_6 were 100 times greater than with air!

The arc quenching ability of SF_6 is far out of proportion to its straight insulating ability as compared with air. This results from the fact that the main factor to consider in arc quenching is not so much the dielectric strength of the medium used as its *rate of recovery* of dielectric strength, near current zero. It is the high rate of recovery of dielectric strength of SF_6 which makes it more desirable than air or the other halogen compound gases for arc quenching. A discussion of SF_6 entitled *An Investigation of the Arc-Quenching Behavior of Sulphur Hexafluoride* has been put in pamphlet form by Westinghouse engineers. Write for a copy.

Gas lasts life of switch

The interrupter is permanently sealed with 30 psi of gas pressure. It will interrupt nameplate rating at only 15 psi gas pressure, thereby assuring long life and dependable operation. Pressure is shown on a gauge which can be read from the ground. Since practically no gas is used in the interrupting operation, it is not anticipated that any recharging with gas will be necessary during the life of the switch.

100 miles, 600 amperes, or 100,000 kilovolt-amperes

The VLB switch is available in ratings from 7.5 kv to 115 kv with a continuous capacity of 600 amperes. This means that the VLB can be used for interrupting load current of 600 amperes, charging current for 100 miles of line, and magnetizing currents for transformer banks up to 100,000 kva. Since it requires only slightly more space, the VLB can be used to replace conventional disconnects.

Extensive tests in the lab and field

Like all Westinghouse products going into critical service, the VLB has undergone exhaustive testing in the laboratory and in the field. The 115-kv switch was set up with 70 kv across the contacts (the value encountered in 115-kv service). Under these conditions, it successfully interrupted 600 amperes at 50% power factor for 230 operations. The same switch then interrupted 56 amperes of static capacitor current 100 times and was in good working order at the conclusion of the test. Another unit interrupted 90 amperes of capacitor current on a 34.5-kv system a total of 2020 times.

Units have been extensively tested and are now in service on the Niagara Mohawk Power Corp. system. For more information on VLB switches write: Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pennsylvania.

GREATER FLEXIBILITY AT LOWER COST

A large gas handling plant saved thousands of dollars by installing five G & W Type "RAL-SC" switch-fuse assemblies as primary switchgear.

Where power failure at any point might disrupt essential service to thousands of gas consumers, Type "RAL" load break oil switches were used to connect two utility feeders in a 12-kv. loop supplying five 1500-kva. transformers and one 450-kva. transformer.

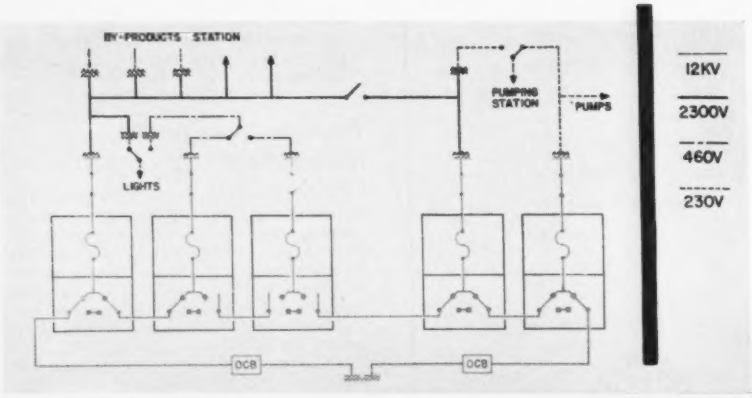
The load of the station is divided into two groups with the coal handling station and by-product station comprising one and the service water pumping station the other. Equipment in these areas operates at 2300, 460, and 230 volts.

The system was designed to provide alternate power at each operating voltage.

Each of the 12-kv. transformers can be connected through its associated "RAL" switch to either of the two utility feeders. If one feeder is down, the entire load can be connected to the remaining feeder—or the load can be divided between the two feeders to keep the system balanced. Fuse protection for each transformer is furnished by Type "SM" power fuses.

The "RAL-SC" units are fully enclosed in sealed, welded steel compartments installed outdoors. Operating shafts of the "RAL" switches extend through the walls of the building and are operated from the inside. Cabinets are interlocked with the switches so the power fuse enclosures cannot be opened when either feeder is connected to the load circuit.

Any one of the 12-kv. transformers can be isolated by operation of the "RAL" switch to connect the loop feeders to the internal tie bus instead of to the load tap. Load normally fed through that transformer can then be picked up by one or more of the other transformers.



SEND AN OUTLINE OF YOUR SWITCH-FUSE PROBLEMS FOR G & W RECOMMENDATIONS.

G & W ELECTRIC SPECIALTY COMPANY
7780 DANTE AVENUE • CHICAGO 19, ILLINOIS, U.S.A.
Representatives in principal cities. In Canada, Powerlite Devices, Ltd., Toronto

Brown Elevated to President . . .

. . . of Southern Indiana G&E to succeed F. B. Culley, who retires Sept. 30. Top official formerly served as Executive VP

ALVA B. BROWN

Alva B. Brown, executive vice president and general manager of Southern Indiana Gas & Electric Co, has been elevated to president of the company to succeed F. Bayard Culley, who is retiring Sept. 30. Culley, however, will continue as a director.

The newly elected president started with Southern Indiana G&E in 1926 as a test engineer. Later he served successively as chief engineer of the Ohio River steam electric generation station, superintendent of production of plants and substations, and general superintendent of electric, gas, heating, and water operations. He was elected vice president and operating manager in 1949, and executive vice president in 1952.

Prior to joining the Southern Indiana organization he was associated with Ohio Edison Co as test engineer.

Heads Utility Group . . . In addition to being a director of Southern Indiana G&E, Brown is also a director of Ohio Valley Electric Corp and its subsidiary Indiana-Kentucky Electric Corp, which are tied-in with the power supply for the Atomic Energy Commission development in Ohio. He is also president and director of Indiana Electric Association.

Culley joined the utility in 1934 as executive vice president. He was elected president of Southern Indiana G&E in 1948.

•

Richard P. Davenport, former assistant superintendent of the Bozeman-Livingston Division of Montana Power Co, has been named superintendent of the utility's Lewistown Division. He replaces **Kennan W. Skeen,** who has been transferred to Bozeman as superintendent of the division there.

Thomas J. Pashos and **David B. Wehmeyer** have rejoined Monsanto Chemical Co's atomic electric project after one-year leaves of absence for study at Oak Ridge (Tenn.) School of Reactor Technology. Monsanto also announced that **Dr Leon Cooper,** who has been employed by the Oak Ridge National Laboratories since 1951, has become a member of the atomic group. Pashos joined Monsanto in 1946 and Wehmeyer in 1949.

Knute J. Falck has been appointed staff engineer in the Electrical Engineering Division of Philadelphia Electric Co. Falck, who joined the utility in 1931, served as supervising engineer until the recent promotion.

Richard W. O'Donnell has been appointed area development manager of the Hartford (Conn.) Electric Light Co. As head of this newly established branch of the utility, he will handle long range planning, industrial, and commercial development in the 11 communities served by the Hartford company. O'Donnell formerly was business manager of the Simsbury (Conn.) Electric Co, which was acquired by Hartford Electric Light in 1949.

Frank L. Snyder, vice president of the Westinghouse Electric Corp, has reassumed management of the company's Transformer Division at Sharon, Pa., as vice president and general manager. Snyder, who was manager of the division from 1949 to 1951, succeeds **Chris H. Bartlett** who has been chosen by Westinghouse to attend the Harvard School for Advanced Management for the next three months. After that Bartlett will return to Sharon as assistant division manager. Earlier this year Snyder was elected a vice president of the firm and assigned to the staff of L. E. Osborne, executive vice president in charge of defense products.

Orren Brownson has been named director of the Division of General Services of Bonneville Power Administration by Administrator Paul J. Raver. Brownson was vice president and general manager of McDonald Candy Co, Eugene, Ore., prior to the appointment to the new post, which is at the policy-making executive staff level. In his new job, Brownson will be responsible for procurement of materials and equipment, land and interests in land, and general plant services and facilities.

MATTHEW M. LAWLER

Named a Vice President

Worthington Corp, Harrison, N. J., has elected Matthew M. Lawler as vice president in charge of its Air Conditioning and Refrigeration Division. Lawler joined Worthington in 1936 and has served as assistant vice president and manager of the Air Conditioning and Refrigeration Sales Division since 1950.

HUBBELL CARPENTER

Minnesota P&L Names Carpenter to New Post

Hubbell Carpenter, assistant chief engineer for Minnesota Power & Light Co, has been promoted to chief engineer. He succeeds Franklin S. Rice, who has retired.

Carpenter, who completed his engineering education at the University of Idaho, became affiliated in 1941 with Superior (Wis.) Water, Light & Power Co, a subsidiary of Minnesota P&L. At Superior, he served as resident engineer during construction of a 17,000-hp steam plant. Since becoming associated with Minnesota P&L, he has had charge of construction of two 44,000-hp generating units at the M. L. Hibbard plant at Duluth, and a 16,000-hp generator at the Thomson plant near Duluth.

He is now in charge of construction of the new 120,000-hp plant at Aurora, Minn.

Toledo Edison Changes

Toledo Edison Co has announced promotions for Henry H. Kerr, vice president in charge of operations, and Peter R. Knapp, general superintendent. Kerr was made executive engineer and will be responsible for investigation and solution of broader engineering and management problems brought about by the company's growth and technical advances in the industry. Knapp assumes charge of electrical and mechanical engineering functions in addition to his plant construction, power production, and transmission and distribution responsibilities.

Roland Whitehurst, vice president and director of Electric Storage Battery Co, Philadelphia, has been named general manager of the firm's new Industrial Products Division. Heading the new Automotive Products Division as general manager is **Robert L. Sommerville,** formerly assistant general sales manager. **W. C. Leingang,** manager of the firm's Chicago factory, will be assistant general manager of the Automotive Products Division.

H. Arthur Howe, manager of General Electric Co's laminated plastics plant at Coshocton, Ohio, since 1951, has been elevated to manufacturing manager of the company's laminated and insulating products department. Howe, who began with GE in 1934, will continue to maintain offices at Coshocton and to manage the Coshocton Plant.

Theodore T. Hayes has assumed his new duties as director of sales promotion for Roller-Smith Corp and its Elpeco Division, both at Bethlehem, Pa. Before joining Roller-Smith, Hayes served in executive posts with Auto-Ordnance Corp, Maguire Industries, and Loven Chemical Co.

Tom Bowen, formerly senior demonstrator of Hi-Line Tools for James R. Kearney Corp in the states east of the Mississippi River, has been appointed head of the firm's Hi-Line Tool Department with headquarters in the St. Louis, Mo., office. The St. Louis company also announced that **Clyde E. Tipsord** has assumed responsibility for the expanded production program of Kearney Hi-Line Tools. Tipsord has been associated with the development of Hi-Line Tools for 20 years.

F. G. Hickling, who has been Cleveland (Ohio) branch manager for Westinghouse Electric Corp since 1931, has been named assistant to the vice president of the Central District staff. Hickling, who joined Westinghouse in 1910, will continue to be located in Cleveland.

Lewis M. Shreve, a managerial consultant for the Public Utility District No. 1 of Chelan County, Wash., has retired after 44 years in the utility field. Shreve's utility career started in 1909 when he joined Wenatchee Electric Co, Puget Sound Power & Light Co's predecessor. When Puget Sound P&L's Eastern Division properties were acquired in 1948 by the PUD, he assumed the district consultant post.

Sidney A. Mitchell has resigned as a director of the American Gas & Electric Co. Mitchell is a member of the new Hoover Commission, which is expected to investigate the federal government's role in development and marketing of power.

Donald M. Powers has been named resident manager of the Ogdensburg (N. Y.) district of Niagara Mohawk Power Corp. In addition to assuming the duties of his new post, Powers will also continue as manager of the Gouverneur (N. Y.) office of the corporation.

OBITUARY

Elon J. DeRight

Elon J. DeRight, 73, vice president of James R. Kearney Corp, St. Louis, Mo., died recently at Kansas City.

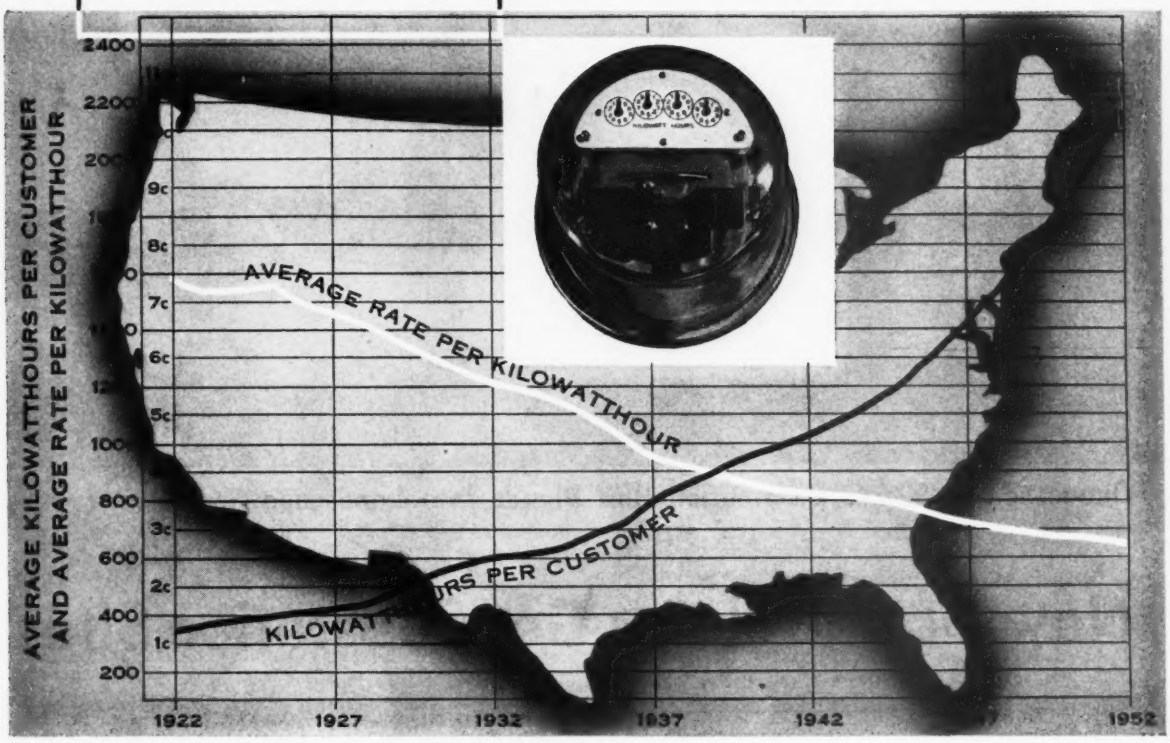
DeRight, who was one of the founders of the Kearney corporation, had served as sales representative in the states of Kansas, Oklahoma, and Missouri since 1926. Prior to his affiliation with the St. Louis firm, DeRight was an assistant superintendent of transmission lines for Kansas City Power & Light Co. At one time he served as construction supervisor for both the J. G. White Construction Co and Aluminum Co of America.

Frank F. Simpson, Sr., 64, district manager at Nacogdoches, Tex., for Texas Power & Light Co, was killed recently in an automobile accident near Hugo, Colo. Simpson, whose utility career dates back to 1911, worked in the utility's Dallas office before assuming the district manager's post at Nacogdoches.

Carroll L. Meins, 60, chairman of the Massachusetts Department of Public Utilities from 1940 to 1947, died at Boston Sept. 14. Meins, who had been vice chairman of the National Association of Railroad and Utilities Commissioners, was collector of the Port of Boston at the time of his death.

a full measure of value

Sangamo J Meters

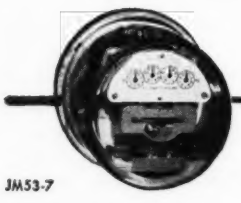


Throughout the years, with steadily lowered rates, Utilities have given consumers a full measure of value.

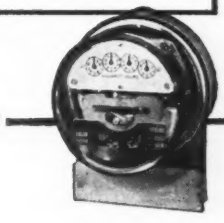
Just as rates have gone down, meter costs per kw of capacity have gone down and values have been increased.

Meter department executives want definite overall values from the watthour meters they buy. They look for such values as—sustained accuracy under varying temperatures . . . quiet long-life operation . . . ease of calibration and repair . . . resistance to corrosive atmospheres . . . ample capacity to measure heavy loads—values that add up to minimum maintenance. These and many other values have made Sangamo J Meters the choice of metermen everywhere.

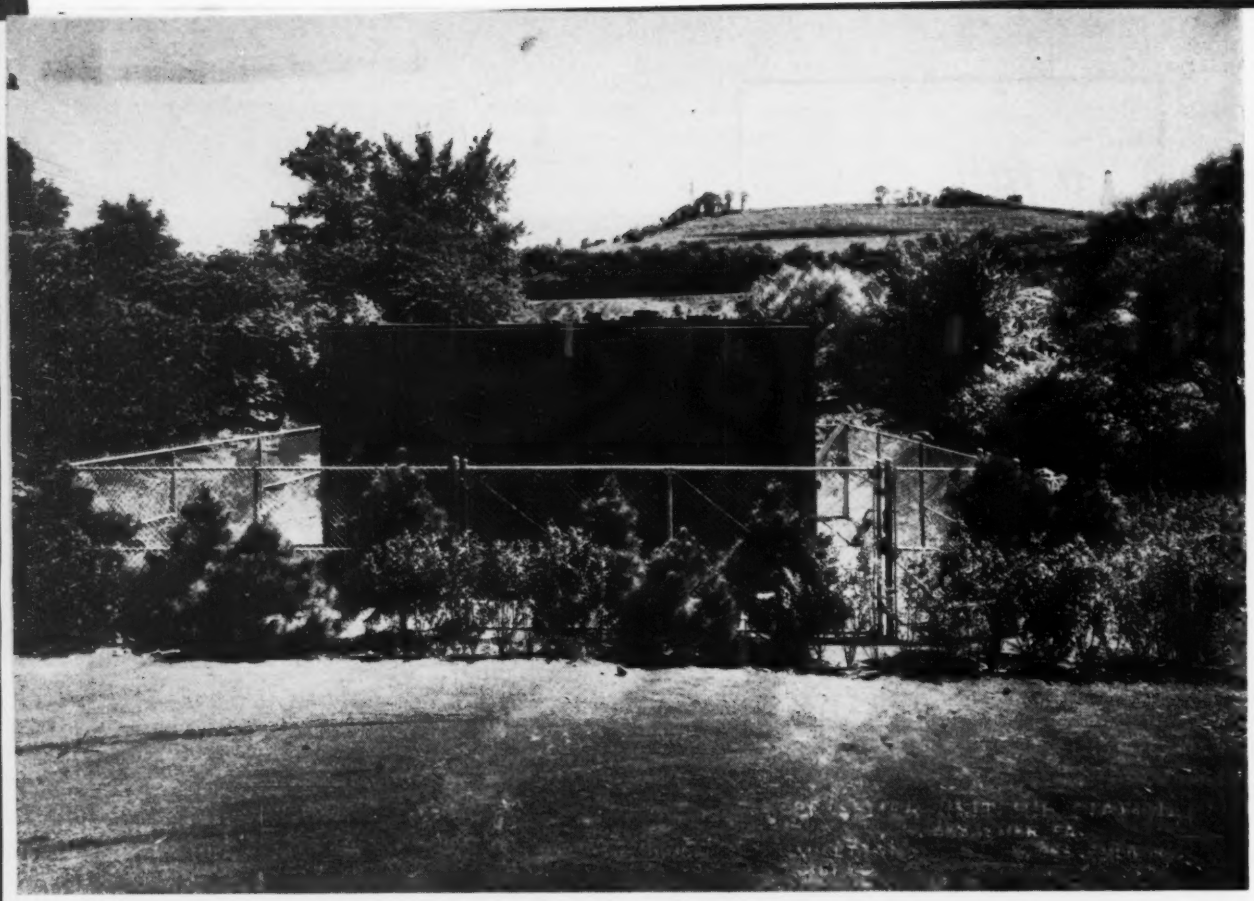
SANGAMO
ELECTRIC COMPANY
SPRINGFIELD, ILLINOIS



Only Measured Facts are Known Facts

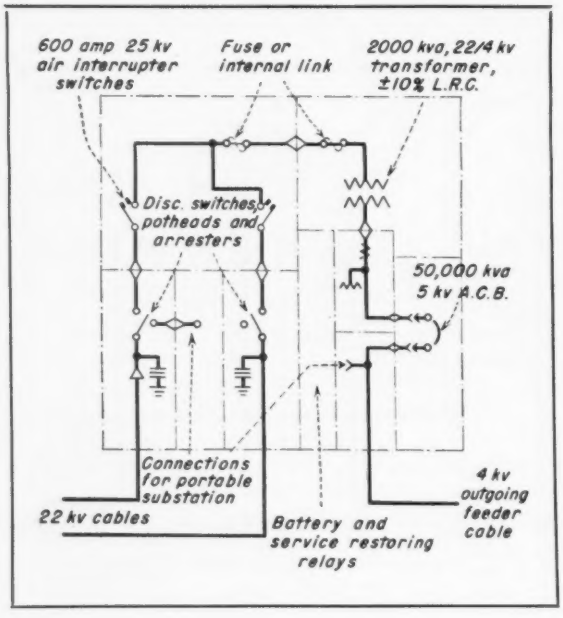


JM53-7



Duquesne's 2,000-kva Distribution Unit Blends Into Landscape So . . .

New Design Helps Get Substation Sites


600 amp 25 kv air interrupter switches
Fuse or internal link
2000 kva, 22/4 kv transformer, ±10% L.R.C.
Disc. switches, potheads and arresters
50,000 kva 5 kv A.C.B.
Connections for portable substation
22 kv cables
Battery and service restoring relays
4 kv outgoing feeder cable

EDWIN M. GUE, Electrical Station Engineer, Duquesne Light Co, Pittsburgh, Pa.

A new self-contained, single circuit unit substation with duplicate high tension supply is now in use on the Duquesne Light Co. system. This metal-enclosed unit is a significant step in the development of an outdoor substation that can be blended into the surrounding area. Absence of steel towers, overhead lines, and open connections permits the use of a low enclosing fence.

Much emphasis was placed on appearance in the design of this station. Duquesne Light has long recognized the fact that such installations must fit appropriately into the surrounding area. First installations of the newest units have been received very well by the public.

More than six years of effort went into this latest design. Earliest use of unit substations on the company's system began in 1947. They were installed as the result of extensive studies to determine the best method of supplying additional 4-kv capacity from the 22-kv subtransmission system.

These investigations revealed that the single circuit unit substation with duplicate high tension supply was the eco-

nomical way to serve the distribution system. The one exception to this finding involved high load density areas. For these localities, multi-circuit units, sometimes connected to primary networks, proved more economical. Where the units were not connected to a network, duplicate high tension supply was necessary to meet service continuity standards set by the company.

For proper coverage substations would have to be spotted over the 800 sq miles in the City of Pittsburgh and the surrounding counties of Allegheny and Beaver that are served by Duquesne Light. A considerable portion of this area is highly industrialized.

Further problems were added by the approximately 150 different municipalities that exist in the service area. These governing bodies, ranging from small townships to large cities, do not have a uniform system of zoning. Lack of uniformity complicates the securing of substation sites and permits. In municipalities which have no provisions in existing ordinances for utility installations, site procurement problems require months to solve.

Early Substation Models . . . Evolution of an acceptable station began with electrical requirements. The first installations consisted of 2,000-kva, 22/4-kv single circuit stations. Each was complete with ± 10% voltage regulating equipment and an automatic 5-kv air circuit breaker. Features of the breaker included instantaneous and time delay overload relays, and automatic reclosing. Internal protective links or high voltage fuses were used, and the station was connected between two pole-mounted air-break switches.

All lines, both 22-kv and 4-kv, left the station overhead. In some locations dead line 22-kv service restoring was accomplished by motorizing the high voltage switches. Storage battery and necessary relays were housed in a separate metal cubicle. The entire station was enclosed with a high chain link safety fence.

Appearance Governs Design . . . As the number of station installations grew, Duquesne Light realized that the appearance of the unit substation would have to be improved or its use would be limited by inability to secure the necessary sites and permits. From a safety standpoint it would be highly desirable if the station could be completely metal-enclosed.

Materialization of such a station was not an easy task. In addition to the cost element there were problems of operation and maintenance. For instance, a design requirement for all Duquesne Light Co 4-kv radial stations specifies that for routine maintenance, it must be possible to substitute a portable substation for the unit substation without interruption to service. Although this requirement caused no particular problem with overhead connections, it presented certain difficulties for cable connected units. As soon as a method was devised for the 4-kv side, the low tension leads were placed underground.

A more difficult problem was the enclosing of 22-kv switches and connections without the use of circuit breakers. It was not practical to enclose ordinary air-break switches, nor were oil-contactors considered safe or satisfactory. What was needed was a device which could be enclosed with normal ground clearances and still interrupt:

- Transformer exciting current.
- Parallel load currents.
- Charging current of two to three miles of 22-kv cable.

First design created problems which . . .

Totally enclosed units overcame

A solution finally was presented when the confined arc air-interrupter switch became available for use at 23-kv and 34.5-kv. After the switches had passed suitability tests, the switch manufacturer cooperated with Duquesne Light in the design of a cubicle to house two switches.

This structure also included potheads for the 22-kv cables, and lightning arresters if necessary. Dual purpose hook-stick operated switches were used to isolate the interrupters and to connect the 22-kv side of the portable substation. High tension fuses, when required, were installed in a metal-enclosed throat that connected the switch cubicle to the unit substation. The separate metal cubicle for relays and battery was retained because dead line automatic switching was still required.

Sitting Advantages . . . Originally it was intended to use this station only in the underground or aerial cable area because the cost of the enclosed station was slightly greater than the open type. However, after the first few installations, it was found that site procurement and securing of permits from the various municipalities were much easier when the application was based on the enclosed rather than on the open type.

The enclosed substation had also these other important advantages:

- It could be built on smaller sites and on sites considered impractical or unsafe for open type stations.
- The design reduced engineering charges because station layout could be standardized, a feature not always

Latest Design . . . The enclosed station became a reality. It was adopted as the standard design for radial single circuit unit substations on the Duquesne Light Co system. But it still lacked many desirable features. It could not be purchased completely from one manufacturer. Purchase of the transformer units required particular coordination because it was obtained from any of several manufacturers.

From the standpoint of appearance and economy it was desirable to eliminate the separate battery and relay cubicle with its interconnecting conduit and cable. Furthermore, valuable space might be recovered by shortening the length of the long throat connection between the switchgear and the transformer unit.

With these changes in mind, discussions were held with several manufacturers, early in 1950, to consider the feasibility of constructing a complete station that could be purchased as a unit from one manufacturer.

Much stress was laid on the need for a pleasing appearance. This requirement provoked a considerable amount of discussion and some controversy, but orders were finally placed for a total of 36 units from three manufacturers.

The final delivered design is now in operation. It incorporates the following features:

- Complete unit mounts on a common foundation with no external connections other than 22 and 4-kv underground cables.
- Control battery and service restoring relays, when provided, are installed in an integral compartment, eliminating separate cubicles.
- A separate, normally dead compartment is provided for the 22-kv connections to the portable substation.
- Plug-in contacts, similar to the stationary contacts of the 5-kv air circuit breaker, are provided on the outgoing leads for the 4-kv portable substation connections.
- A barrier between the bank and load side stationary contact housings of the 5-kv breaker permits the entire station, except the line compartments, to be maintained without any service interruption.

Economically, the new unit is comparable to past practice. Slightly more is paid for the equipment, but installation costs have been reduced. As a final touch, proper landscaping can be applied more easily.

CHARLES E. ROBBINS

OLIVER TOWNSEND

Key Officers Named for AIF

Robbins and Townsend will manage association to encourage use of nuclear energy for peaceful purposes

Charles E. Robbins, former vice president of Bozell & Jacobs, Inc, has been named executive manager of Atomic Industrial Forum, Inc, an organization formed last April to encourage development and utilization of nuclear energy by all phases of industry.

Assisting Robbins will be Oliver Townsend, formerly assistant to the chairman of the Atomic Energy Commission. Townsend will serve as assistant executive manager and secretary of the Forum. On Sept. 15 he was appointed a member of AEC's Advisory Committee on Industrial Information.

GORDON R. MOLESWORTH

Work to Begin . . . In making the announcement, Walker Cisler, president of both the Forum and Detroit Edison Co, declared, "with the appointment of these two key staff officers, the important work we envisage for the Atomic Industrial Forum can now get underway. The Board of Directors and I look forward to a long and constructive period during which this new organization will help stimulate peacetime development in the . . . field of atomic energy."

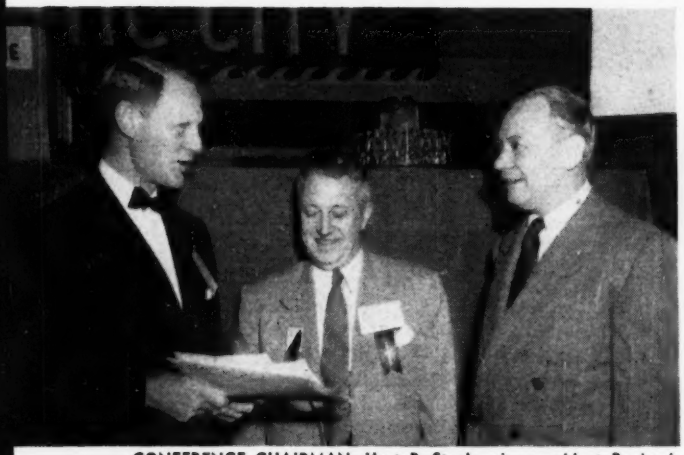
The Forum, he said, will provide a "mechanism through which problems relating to atomic energy development might be resolved, by disseminating non-secret information about the industrial aspects of atomic energy and by fostering nuclear research and development."

The Forum will establish permanent headquarters about Oct. 1. Temporary offices are located at Room 1702, 60 Broadway, New York, N. Y.

Molesworth Joins B&J . . . In a concurrent announcement, Bozell & Jacobs reported that Gordon R. Molesworth had been named director of its Nuclear Energy Information Division to succeed Robbins. Molesworth has been serving as assistant to the manager of Oak Ridge operations for AEC and has had charge of public relations for that operation. He will work on the Electric Companies Public Information Program.

Technical Advances Spotlighted by IES

IES PRESIDENT, Everett M. Strong (right), Cornell University, congratulates president-elect, A. Homer Manwaring, vice president Philadelphia Electrical & Mfg Co



CONFERENCE CHAIRMAN, Hoyt P. Steele, vice president Benjamin Electric Mfg Co, Executive Committee Chairman Clarence C. Keller, vice president Holophane Co, and Walter Sammis, president Ohio Edison Co and president of EEI

The demonstration and showing of nearly 100 new lighting products and techniques highlighted the National Technical Conference of the Illuminating Engineering Society held in New York, Sept. 14-17. A number of the new products, demonstrated for the first time, were recently declassified by military authorities.

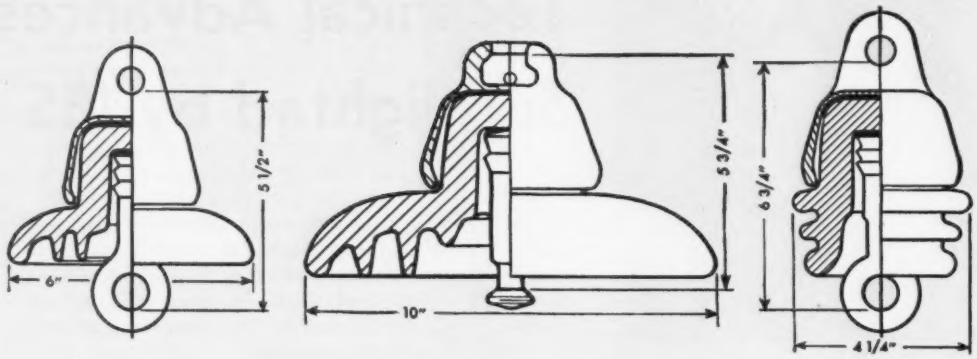
Addressing the conference, attended by more than 1,000 persons, Walter H. Sammis, EEI president, and president of Ohio Edison Co, predicted a continued sharp upsurge in the use of power for lighting. He said that some of the greatest lighting opportunities lie in the field of home lighting—already a $500 million business for the country's electric utilities. For those serving highly industrialized areas, he said, residential lighting is often an off-peak load which may be increased without an increase in the peak load.

IES president, Everett M. Strong, Cornell University, stressed the need for more knowledge of the fundamental relations between light and sight gifted people. He said that the problem is extremely complex and difficult and "begets much honest debate as to the merits and the significance of diverse research procedures and results."

The urgent need for more active technical committee members was stressed by IES President-elect A. Homer Manwaring, vice president, Philadelpiha Electrical & Manufacturing Co. The use of the "same old names," he said, was occasionally criticized, but they are the "work horses" of IES who can be counted upon.

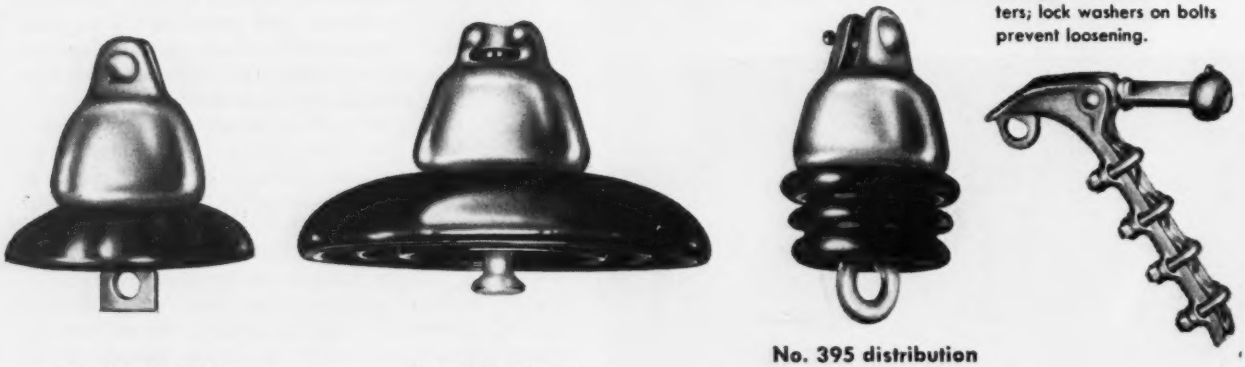
(*Continued on page* 38)

NEW FELLOWS are presented with pins by President Strong. Group includes G. E. Shoemaker, Philadelphia Electric; W. M. Potter, G. E.; W. P. Lowell, Jr., Sylvania; W. H. Kahler, Westinghouse; R. M. Evans, Eastman Kodak Co; G. R. Baumgartner, G. E.; G. W. Beals, The Miller Co; Dean Farnsworth, U. S. Naval Submarine Base; G. A. Fry, Ohio State University; S. K. Guth, G. E.; J. W. Bateman, Canadian G. E.; E. H. Salter, Electrical Testing Laboratories; G. J. Taylor, Day-Brite. New Fellows not present were E. B. Hallman, Electric Service Mfg Co; H. J. C. Pearson, CAA, and C. W. Zersen, Chicago Lighting Institute



No. 5000 series strain clamps

These clamps provide a dependable, efficient, low-cost method of dead-ending ACSR, copper, Copperweld-copper, and composite conductors. Easily attached, in the air. Drop-forged steel, heavily galvanized. High-strength steel pins with bronze cotters; lock washers on bolts prevent loosening.



No. 1261 6-inch suspension insulator

Flashover voltages: dry, 60,000; wet, 30,000. Mechanical and electrical strength, 10,000 pounds. Leakage distance, 7".

No. 1253 10-inch suspension insulator

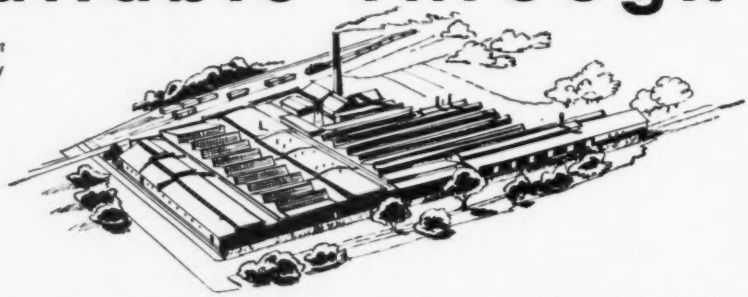
Flashover voltages: dry, 80,000; wet, 50,000. Mechanical and electrical strength, 15,000 pounds. Leakage distance, 11½".

No. 395 distribution suspension insulator

Flashover voltages: dry, 60,000; wet, 32,000. Mechanical and electrical strength, 10,000 pounds. Diameter, 4¼"; length, 6¾"; leakage distance, 5½".

Illinois Electric Porcelain Now Available Through

by **W. V. SWAN,** Vice President
Illinois Electric Porcelain Company

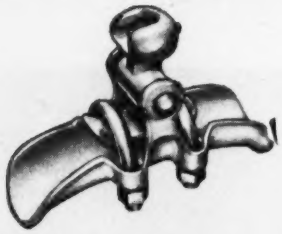


With the acquisition of Illinois Electric Porcelain Company of Macomb, Ill., by McGraw Electric Company, Illinois Electric Porcelain becomes a McGraw Electric subsidiary, and its products for utility companies will be sold exclusively by the Line Material Company Division of McGraw Electric Company.

Illinois Electric Porcelain Company has manufactured pin-type insulators since 1915, and suspension insulators since 1921. To this long manufacturing experience has been added Line Material's broad experience in design, manufacture, and application of electrical porcelain. L-M now offers an extensive line of electrical porcelain that provides a high degree of quality in design and manufacture.

Included in this line are transmission and distribution insulators, insulator hardware, and some special items to meet unusual construction requirements.

Modern plant facilities assure adequate volume and economical manufacture. Quality is carefully controlled through extensive testing of raw materials, processes, and finished products.

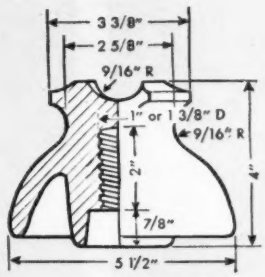


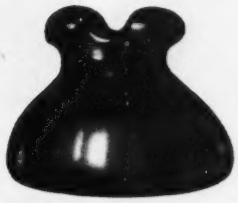
No. 6200A-U series strain clamps

The long, smooth, large-radius conductor seat prevents concentration of vibration-bending and stresses at conductor take-off points. The assembly is light in weight and has short connecting length.

U-bolt clamps maintain permanent high-pressure cable-to-clamp contact and help prevent conductor burning. Drop-forged steel, heavily galvanized; heat-treated high-strength pins with bronze or brass cotters. Types available for ACSR, all-aluminum, stranded copper, Copperweld, Copperweld-copper, and other composite conductors. Sizes from 6½" to 12" long; strengths from 15,000 to 25,000 pounds.

An extensive line of suspension and strain hardware accessories is available to meet almost every standard and many special requirements.

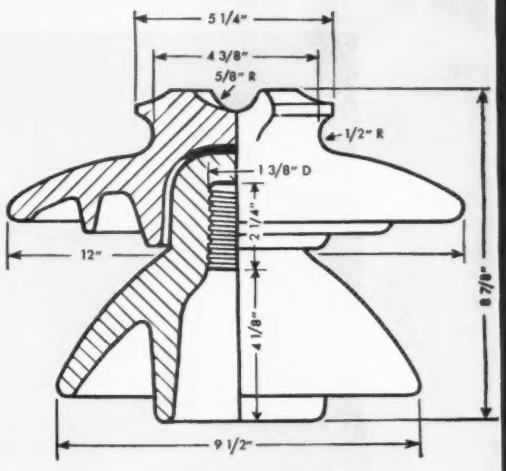




No. 266 distribution pin-type insulator

No. 2055 transmission pin-type insulator

Low and high voltage pin-type insulators. Above, No. 266 distribution insulator—70 kv dry flashover—is 5½" in diameter and 4" high. The No. 2055 transmission insulator at right has 145 kv dry flashover, is 12" in diameter and 8⅞" high, has 27" leakage distance. Parts are strongly joined with neat portland cement, carefully cured to assure highest possible strength.



Company Products
Line Material Company

Designs provide more than adequate leakage distance in each rating class. Cementing of multi-part insulators is done with neat portland cement, carefully cured under controlled conditions of humidity and temperature to assure extremely strong joints—as strong as the porcelain itself.

Get Full Information

Illinois Electric Porcelain products are available through L-M Field Engineers, sales offices, and warehouses throughout the country. Ask the L-M Field Engineer for information on Illinois Electric Porcelain products; or write Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division)

ILLINOIS ELECTRIC PORCELAIN COMPANY

(a McGraw Electric Company Subsidiary)

LINE MATERIAL

Electric Porcelain Insulators

149

Illinois Electric Porcelain Company products are sold to utilities exclusively by Line Material Company (a McGraw Electric Company Division)

CONTESTANTS with chairman, Lee E. Tayler (left), Detroit Edison. Standing are R. R. Duncan, New Bedford Gas & Edison Light Co; M. G. Zervigon, L. N. Goodman & Associates; Nick Stuffer, Westinghouse; H. Koether, Wisconsin Electric Power; L. E. Spears, Penn. Pr. Seated are M. Humber, Humber & Walker Co; B. Doucet, Curtis Lighting of Canada, and W. A. Toly, Columbia Electric & Mfg.

JUDGES discussing contest presentations are E. M. Strong, Cornell Univ.; L. H. Graves; W. F. Little, Electrical Testing Laboratories, Inc.; S. G. Hibben, Westinghouse; and C. L. Crouch, Technical Director of IES. Factors in judgment were interest, application suitability and effect of solution, originality of technique and practice of solution, and presentation—concise, completeness, clarity

Most Interesting Lighting Job Featured at IES Conference

One of the most outstanding features of the National Technical Conference of the Illuminating Engineering Society, held Sept. 14-17 in New York, was a contest in which the best and most original lighting jobs in the country were presented.

These installations were described by the winners who won "firsts" in IES Section and Chapter contests and at the Regional Conferences.

First prize went to Merrill Humber, Humber & Walker Co, San Mateo, Cal., for the "Lighting of the Broadway Tunnel" in San Francisco. Engineering details were excellently worked out to provide three gradations of the lighting system under both day and night-time conditions.

Nick Stuffer, Westinghouse, was awarded second prize for "Lighting An Executive Office." This system was devised for dual purpose use—conference room requiring "conversational lighting" and work area requiring high levels.

Third award went to Mario G. Zervigon, Louis N. Goodman and Associates, New Orleans, La., for "Floodlighting the Mississippi State Highway Dept Office Building" Batesville, Miss. Architecturally difficult to floodlight, the solution was to mount PAR-38 lamps in outdoor aluminum holders on vertical baffles of building.

Fourth prize was split between Henry J. Koether, Wisconsin Electric Power Co and L. E. Spears, Pennsylvania Power Co. Koether's presentation was "Lighting of a Dress Shop," and Spears' job was "Lighting of a Jewelry Store."

PAST PRESIDENTS Walter Sturrock (left), General Electric and S. G. Hibben (right), Westinghouse, with W. A. Stannard, Consumers Power Company (second from left) and R. F. Hartenstein, Ohio Edison Company

LIGHTING EVALUATION speakers with Session Chairman W. P. Lowell, Jr., Sylvania (left seated). Standing are Dean Farnsworth, U. S. Naval Sub. Base; C. E. Egeler, G. E.; W. Allphin, Sylvania; and H. I. Logan, Holophone. Seated is Dr. D. E. Spencer, Univ. of Conn.

LIGHTING PROGRESS Chairman, Theodore C. Sargent, Sylvania, demonstrates new light box lens. In background are new fluorescent street unit (left) and new 700-w fluorescent mercury unit (center). Also demonstrated was latest theater electronic lighting control system which was used to light the stage and ballroom for the program

Other contestants were Benoit C. Doucet, Curtis Lighting of Canada—"Lighting of a Church"; D. E. Frank of Spokane, Wash.—"Lighting a Banking Room" (entry was presented by Walter A. Toly, Columbia Electric & Mfg Co); E. J. Whitlow, McClure Electric Co, Dallas, Texas, "Lighting a TV Tower" (entry presented by M. J. Meyers of Tulsa); and R. R. Duncan, Jr, New Bedford Gas & Edison Light Co, Mass.—"Lighting of a Bank Director's Room."

Lighting Progress Report . . . A dramatic presentation outlining the progress during 1952-53 at home and abroad was staged by the IES national committee on Lighting Progress, headed by the chairman, Theodore C. Sargent, Sylvania Electric Products, Inc.

Recently declassified by the Military and demonstrated for the first time, was a 2 million candlepower incandescent searchlight for tanks. It has an 18-in. Alzak mirror, a 2000-w lamp and shutter for quick extinction of the light beam. Another military item shown was high intensity reflectorized phosphorescent panels for airports and heliports. These reflector panels are said to have 20 times the response of those in former use.

Infrared Cooking Lamp Demonstrated . . . Among the other featured presentations were glass and plastic materials for obtaining maximum use of daylight, a 1550-w infrared heat lamp used as a top burner in an electric kitchen range, and recent lighting applications in the industrial, commercial and school-lighting fields.

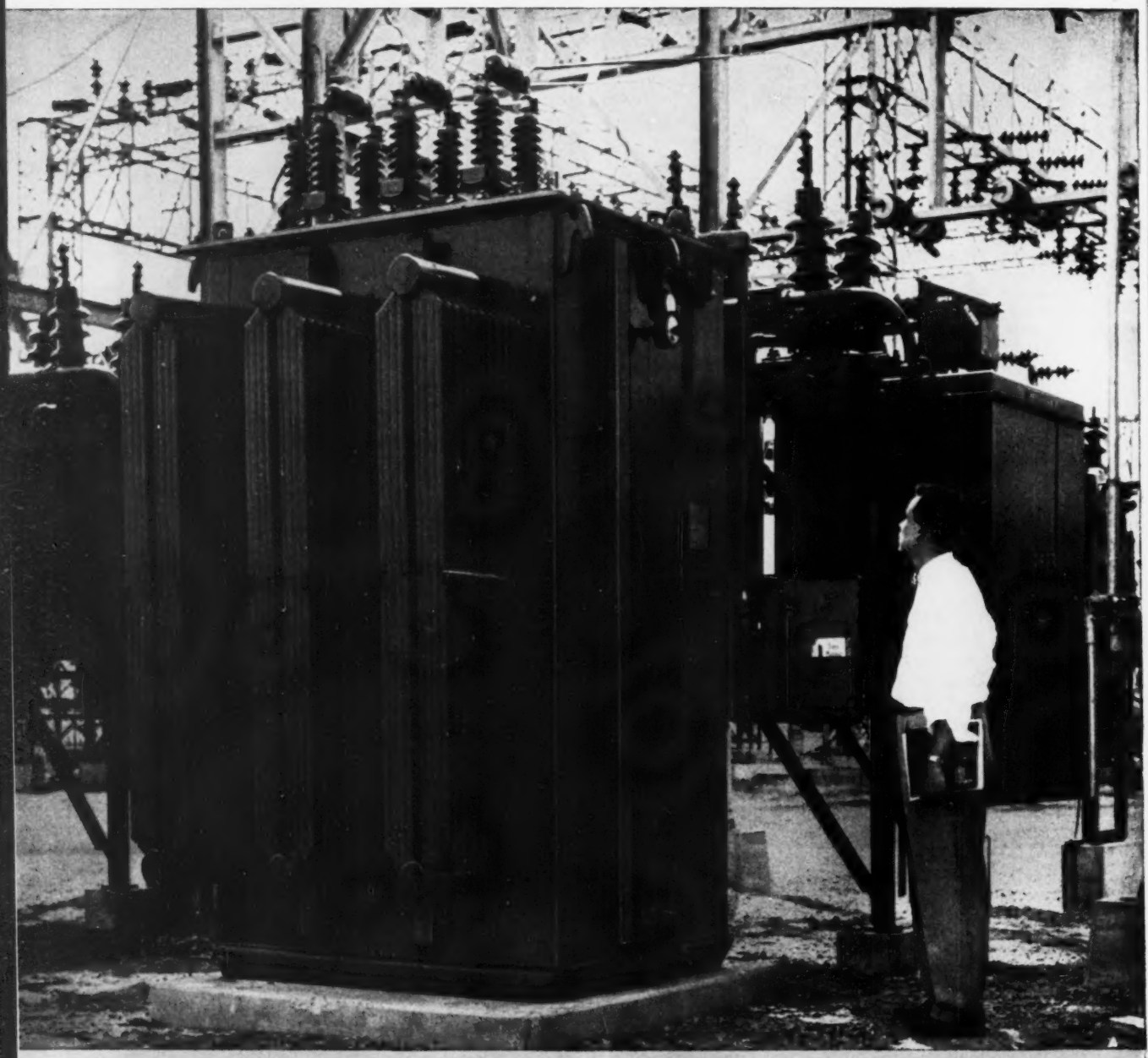
Home Lighting . . . Newest methods of lighting the modern home attractively while providing adequate levels of illumination for difficult eye tasks was discussed at the residence lighting session.

Edith Buchholtz, Westinghouse Electric Corp, and chairman of the committee, presided. Each of the speakers represented one of the five Residence Lighting Forums now working in various parts of the country to spread a knowledge of good home lighting practices.

NEW INFRARED heat lamp (1550 w) used as top burner in kitchen range, resists extreme temperature change by ice cubes placed on top surface

COLOR CORRECTED fluorescent mercury lamp demonstrated in new 700-w size by W. Till, Westinghouse. At right is demonstration panel showing size comparison of same wattage incandescent lamps

How Simple Design Cuts



High Quality Construction

Tap leads from the winding are brazed to bus bars that project through the barrier separating transformer and mechanism compartments. Double bolts secure these bus bars to the dial switch terminals so that neither electrical nor mechanical vibration can work them loose. The barrier supporting the bus bars is well below oil level for maximum dielectric strength.

Quick-Break Mechanism

The *Quick-Break* mechanism is built to withstand severe operating conditions without servicing. All moving parts — even the driving motor — operate under oil. There is nothing to lubricate or adjust. Universal couplings between operating mechanism and dial switches eliminate danger of misalignment. Every nut and bolt is securely locked. 20 years of field experience prove its value.

Cost of Regulation . . .

★ **Improves Quality**

★ **Provides for Long Life**

★ **Simplifies Maintenance**

ALLIS-CHALMERS 5/8% STEP VOLTAGE REGULATORS

THE SIMPLE DESIGN of Allis-Chalmers three-phase power regulators solves the problem of lowering regulation costs. Thanks to simplicity, you get highest quality regulation with an absolute minimum of maintenance. You get ± 1 volt band, Class I accuracy, 20% range of regulation, and many famous Allis-Chalmers features.

Unit Construction Improves Quality

Unit construction keeps workmanship quality at a high level. All connections are made before the unit is tanked. Thus work is done while parts are readily accessible and easily inspected. Unit construction also permits continuous leads from transformer coils to the double-bolt terminals on the dial switch, eliminating a total of 78 connections required in other designs.

Feather-Touch Control

Simplicity also extends to the control — the famous *Feather-Touch* control feature. This control has fewer operating components than any other regulator control. Operation is easy because control components are calibrated. Voltage band and voltage level can be set in less than a minute.

Simple, Rugged Tap-Changing Mechanism

The *Quick-Break* tap-changing mechanism is another major reason why Allis-Chalmers three-phase power regulators have built up their excellent operating records over the past twenty years. It provides fast tap changing without shock, since it operates on the balanced spring principle, snubbing fast-moving parts to a quick standstill after a tap change. This field-proved design requires virtually no maintenance.

It pays to investigate all the high quality features of Allis-Chalmers 5/8% step regulator design. For more details, contact the A-C district office nearest you or write Allis-Chalmers, Milwaukee 1, Wisconsin.

A-4126

ALLIS-CHALMERS

Originators of 5/8% Step Regulation

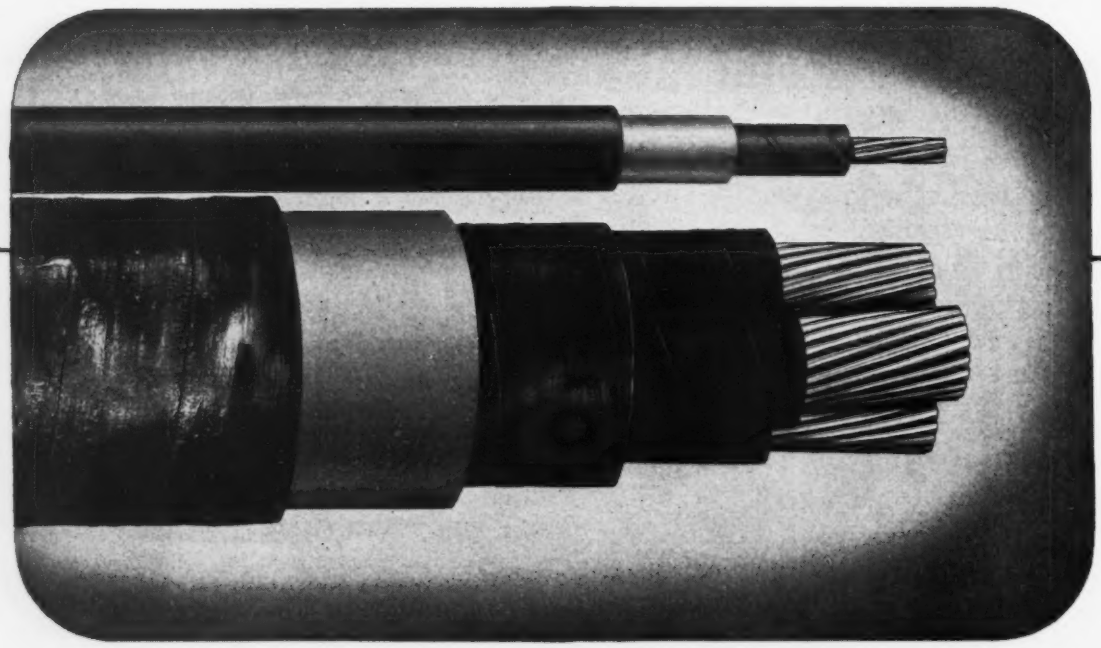
Long-Life Contacts

Four factors add to contact life: (1) contacts are large; (2) they are manufactured with arc-resisting material; (3) small 5/8% steps reduce the amount of kva to be interrupted; and (4) fast, clean contact separation provided by the *Quick-Break* tap-changing mechanism snaps the moving contacts from one position to the next before there is time for damage to occur.

Ratings Available	Through 2500 Kva Up to and Including 69 Kv

ROEBLING PROTECTIVE COVERINGS ON LEAD SHEATHED CABLE

for utilities, chemical plants and the petroleum industry



LEAD SHEATHED CABLES used in certain applications by public and private utilities, chemical plants and the petroleum industry are often impaired by electrolysis or chemical corrosion. But such corrosive action can be effectively reduced, and cable life extended, by using Roebling Paper Insulated and Varnished Cambric Cables with either of two outer protective coverings.

One of these coverings is an extruded thermoplastic sheath employing a special high-molecular weight polyethylene. The other is ROESHEATH, built up of neoprene and neoprene-filled fabric tapes and vulcanized directly over the lead sheath. Both coverings not only provide essential protection, but, in some cases, may permit the thickness of the lead sheath to be reduced.

For longer, more dependable cable life and worthwhile economy write for full information... and get our recommendations for solving any special problem.

John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

A subsidiary of The Colorado Fuel and Iron Corporation

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CF&I

JAR ROEBLING

New Labor Trouble at Joppa

Contractor and union officials work to settle first walkout staged since signing of 'no strike' agreement

The Bechtel Corp has gotten its first big taste of labor trouble at Electric Energy Inc's Joppa, Ill., plant since succeeding Ebasco Services Inc, a month ago as contractors on the project that will serve the Atomic Energy Commission's new plant in Paducah, Ky. As this issue went to press, Bechtel officials and leaders of the A.F.L. International Association of Bridge and Structural Iron Workers were seeking to straighten out difficulties caused by a walkout begun by ironworkers of Local 595 on Sept. 14.

Early last week the International union had created a new local—No. 758, with headquarters in Cairo, Ill. It would supplant Local 595, which has had its offices in Paducah.

How soon Local 758 would set up shop was in doubt as the week ended. One A.F.L. spokesman said that the formalities necessary to its establishment would delay resumption of work at least until sometime this week. This may prove an optimistic view, since the striking ironworkers said they would ignore the International union's action.

Long-Standing Squabble . . . The latest stoppage—about the 60th since work on the project began 2½ years ago—was the first reported at Joppa since A.F.L. leaders signed a "no-strike" agreement with Bechtel officials last month. It stemmed from a request made by Bechtel officials that the local union furnish six men working in the vicinity on a project for the American Bridge Division of the U.S. Steel Corp.

Wilford B. Sanders, business agent for the local, sent six men, but they were not the six requested by the contractor. When the job superintendent refused to hire them, the steward for Local 595 instructed all 33 ironworkers to leave their posts.

They were joined by the remaining 600 construction workers at the project, who refused to cross the ironworkers' picket line, even after the officers of the International ordered the workers to be back on the job on the following Monday. On the 21st, Joppa strikers were joined by the remaining members of Local 595, including 231 ironworkers from the Shawnee plant of the Tennessee Valley Authority, also being built to serve AEC's Paducah plant.

Disciplinary Action Seen . . . It was reported that the union officials are considering action against nonstrikers for defying the back-to-work order.

"The strikes," said Joseph D. Keenan, secretary-treasurer of the A.F.L. Building Trades Department, "have been called in complete defiance of orders from the international union."

The problem, Keenan said, is especially crucial "because we are duty bound to keep this job going in the interests of national defense."

Wage Boost in Northwest

Inside wiremen and apprentices belonging to Electrical Workers Union 46 and employed by contractors in the Puget Sound chapter of the Electrical Contractors Association at Seattle, have received a wage increase of 5½¢ an hour and new welfare benefits of 7½¢ an hour. New scale for journeymen is $2.92½ an hour.

Plans Made for EEI Labor Conference

Plans for the annual Round-Table Conference sponsored by the Industrial Relations Committee of the Edison Electric Institute were outlined at a meeting in New York City this month. The conference, to be held at Chicago's Sheraton Hotel on Oct. 12-14, will be highlighted by addresses on management responsibilities to be given by Walter H. Sammis, president of the Edison Electric Institute, George M. Gadsby, president of Utah Power & Light Co, and Ernest R. Acker, president of Central Hudson Gas & Electric Corp. In the above picture EEI committee members check the registration blanks received from 36 states. Members of the committee, from the left, are: J. C. Arnell, senior assistant personnel director, Consolidated Edison Co of New York; Jay Alan Reid, director of personnel, Southwestern Gas & Electric Co; Donald Bartlett, manager of Industrial relations, Western Massachusetts Electric Co; and F. R. Rauch, vice president, Cincinnati Gas & Electric Co.

Florida Rate Verdict May Have Wide Effect

C. P. GUERCKEN, Assistant to Vice President, Ebasco Services, Inc

The Florida Railroad and Public Utilities Commission has handed down a decision on the rate of return of the Florida Power Corp that may have a widespread effect upon utilities, whether in original cost jurisdictions or not. While the commission made nine specific findings on matters pertaining to the electric industry, the following five were most important:

- A rate of return of 6.45% on the year-end rate base of the property of the utility.
- A year-end (1952) rate base predicated on net original cost but excluding electric plant acquisition adjustments.
- Working capital adjusted for federal income tax accruals.
- Uniform rates over the entire system of the utility.
- Assertion of jurisdiction over private contracts between the utility and its customers on industrial rates made before the creation of the commission.

Rate Factors Listed

Regarding the rate of return, the commission said:

". . . The more important factors entering into such a determination are the general economic conditions, the ability of the utility to attract capital, the current cost of money, the financial history of the utility, the risk involved, comparisons with other enterprises of a similar nature, and efficiency of management."

". . . At the present time a return of only 6% would not appear to be fair and reasonable for a public utility which is engaged in a tremendous expansion program which must be financed by the issuance and sale of large amounts of bonds and stocks of the utility. In view of the current cost of capital and the condition of the money market today, concerning which there appears to be no immediate prospects for improvements, a rate of return of something in excess of 6%, but less than 6½% would, in our opinion, be reasonable for an electric public utility having a financial history and expansion program similar to the applicant.

". . . While we would be the last to increase rates and charges which the public must pay for essential services, nevertheless, we will not contribute to the slowing down of the growth and industrial development of this great state by closing our eyes to the reasonable needs of those public utilities which are attempting to render essential services to the public. Such a policy would not only violate the constitutional rights of the utilities, but would constitute a great disservice to the public by depriving it of the service to which it is entitled."

Rate Base Opinion

On the rate base score, the commission said:

"In normal times and under stable conditions the amount of revenue required to produce a fair rate of return can generally be calculated accurately and equitably upon the average and not the year-end balances of the test year. On the other hand, where a utility is in the throes of unusual growth and confronted at the same time with constantly increasing investment and operating costs, conventional notions of ratemaking must be adjusted to the circumstances and this is especially true where net earnings fail to keep pace with heavy additions made and to be made in plant investment.

". . . If such losses incurred through the regulatory lag are further augmented by the adoption of an average investment rate base which coincides with an investment level more than a year old, then the utility becomes the victim of confiscation; it cannot successfully sell its securities to raise the capital with which to finance its expansion program; customers are unable to secure adequate service; prospective customers are unable to secure any service; and the public suffers . . ."

As regards the inclusion of Account 100.5, electric plant acquisitions adjustments in the amount of $1,198,000, the commission eliminated this item from the rate base by stating:

". . . The inclusion of this item in the rate base has not, in our opinion, been justified."

As to working capital, the commission has followed in the steps of the Federal Power Commission, and other commissions, in deducting a portion of the federal income tax accruals. It is of interest to note, however, that while commissions in the past have generally deducted three-quarters of the annual federal income tax accruals from working capital, the Florida commission has contented itself with only one-half of one-quarter of that amount.

On the matter of rates, the commission made it plain that the unit for rate making is to be the integrated system of the company as a whole. The commission said:

". . . We have treated as a single unit all the business of the company and have not segregated the property employed and the costs incurred in connection with the company's operations within local political subdivisions. Normally, the unit for ratemaking purposes should be the entire interconnected operating property of the utility without regard to geographical or political subdivisions. Exceptional circumstances may require or permit the segregation and fixing of a smaller unit.

"Whether such exceptional circumstances exist is a matter to be determined by the administrative body in the exercise of its sound discretion. From a social and economic standpoint, the use of the entire property of the applicant seems sound. The company is an integrated public utility and electric energy generated by one of its powerhouses may be transmitted and delivered to any point within the whole system. An emergency shutdown or failure in one part of the system may be met by electric current generated elsewhere in the integrated system. A segregation under such circumstances would be purely artificial and, in part at least, arbitrary. In this case neither reason nor expediency imposes any obligation upon this commission to treat local geographical or political subdivisions as separate units for ratemaking purposes . . ."

As regards industrial rates, the assertion of jurisdiction by the commission over private contracts entered into by the utility and its customers is a move by the commission to make

such adjustment as it may see fit. The commission ruling said:

". . . The record here discloses that increased operating costs have not been reflected in these industrial rates. We recognize, of course, that large industrial users of electric energy make possible for an electric utility to expand its facilities so that domestic and other customers of the utility may have more efficient and economical service. However, industrial rates should bear their fair share of increased costs. Some, if not all, increases in operating costs are related to the generation, transmission and distribution of electric energy for industrial use. It is our opinion that the record herein discloses conditions and circumstances that require some portion of the increases herein authorized to be reflected in an upward adjustment of the applicant's existing industrial rates."

The commission went on to warn the utility about the competitive situation of the large industrial service by pointing out:

"In adjusting its industrial rates upward, however, the utility should bear in mind the fact that some of its industrial customers are located in territory that might readily be served by other electric utilities. An industrial customer desiring to change from one utility to another in order to take advantage of a better contract industrial rate would, of course, be confronted with the necessity of having the new contract rate approved by this commission. It is not likely that we would, in the absence of judicial coercion, require one utility to increase its industrial rates and then approve lower industrial rates for a competitive utility. Applicant, however, should bear in mind this potential competitive situation in adjusting its industrial rates upward as directed herein."

REGULATION

Pennsylvania Public Utilities Commission in the case of Manufacturers Light & Heat Co has found a fair value rate base of $70 million, about the midpoint between original cost less depreciation and a 5-year trended original cost level, also less depreciation. Depending upon pipeline costs to the company, at the present under bond, the commission found the rate of return to be either 5.48% or 6.5%.

Today in Utility Finance

YIELDS (%)

Quality	Bonds			Preferred Stocks			Common Stocks		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
DATE 1953									
Sept. 17	**3.31**	**3.39**	**3.58**	**4.37**	**4.55**	**4.84**	**5.41**	**6.02**	**6.07**
Sept. 10	3.30	3.35	3.55	4.33	4.53	4.80	5.34	5.82	5.94
END OF QTR									
2nd 1953	3.34	3.46	3.64	4.47	4.70	4.88	5.52	5.93	6.10
1st 1953	3.15	3.23	3.39	4.16	4.41	4.66	4.95	5.24	5.50
4th 1952	2.99	3.03	3.14	4.06	4.22	4.59	4.98	5.33	5.62
3rd 1952	2.99	3.03	3.16	4.10	4.26	4.61	5.18	5.59	5.96

Data: Reis & Chandler, Inc.

EARNINGS

Company	Period Months Ended		Net Income 1953	Net Income 1952	Earnings Per Common Share 1953	Earnings Per Common Share 1952
Carolina Power & Light	12	Aug.	$7,230,450	$6,795,528	$....	$....
Central Illinois Light	12	Aug.	3,436,164	2,954,649	3.26	2.73
Consolidated Edison of N. Y.	12	Aug.	49,856,424	41,496,451	2.97(a)	2.39(a)
Minnesota Power & Light	12	Aug.	3,994,586	3,211,591	3.98	3.07
New York Electric & Gas	12	Aug.	8,449,847	7,419,404	....	....
Ohio Edison, consolidated	12	Aug.	18,279,965	14,987,298	2.99(b)	2.77(b)
Pennsylvania Power	12	Aug.	2,304,179	1,995,335	....	....
Portland General Electric	12	Aug.	3,698,055	3,645,039	2.47	2.69
Southern Indiana Gas & Electric	12	Aug.	2,112,051	1,805,544	2.13(c)	2.03(c)

Notes—(a) Based on 16,852,026 shares in 1953 and 15,761,396 shares in 1952; (b) Based on 5,278,306 shares in 1953 and 4,798,460 shares in 1952; (c) Based on 799,167 shares in 1953 and 685,000 shares in 1952.

FINANCING

Company and Description	Amount of Offering (000)	Offering Price	Yield to Public
WEEK OF SEPTEMBER 17-23			
Bonds			
Duquesne Light—1st mtg due 1983	$12,000	$101.93	3.52
Richmond, Ind—electric revenues 1954-84	6,000	various	1.60-3.15
SCHEDULE FOR SEPTEMBER—OCTOBER			
Bonds			
Indiana & Michigan Electric—1st mtg due 1983	$15,000	.....	Sept. 29
Mississippi Power—1st mtg due 1983	4,000	.....	Oct. 6
Rockland L & P—1st mtg due 1983	8,000	.....	Oct. 13
Los Angeles Department of W&P—revenue bonds	20,000	.....	Oct. 14
Public Service Electric & Gas—1st mtg due 1983	30,000	.....	Oct. 27
Kansas Gas & Electric—1st mtg due 1983	10,000	.....	.....
Preferred Stock			
Duquesne Light—100,000 sh $50 par	$5,000	.....	.....
Kansas Gas & Electric—50,000 sh $100 par	5,000(a)	.....	.....
Indiana Michigan Electric—70,000 sh	7,000(b)	.....	.....
Common Stock			
New York State Electric & Gas—337,118 sh (to be offered commonholders on 1-for-8 basis, record Sept. 17 to expire Oct. 5)	.....	.....	.....
New England Gas & Electric—194,916 sh (to be offered commonholders on 1-for-10 basis, record Sept. 29 to expire Oct. 16)	.....	.....	.....
Hartford Electric Light—105,500 sh (to be offered commonholders on 1-for 8 basis)	.....	.....	.....
Public Service E&G—800,000 sh	.....	.....	Oct. 20
Rockland L&P—210,721 sh (to be offered on a 1-for-7 basis, record Oct. 8)	.....	.....	.....
Long Island Lighting—685,648 sh (c) (to be offered commonholders on 1-for-7 basis, Oct. 14 to expire Oct. 29)	.....	.....	.....
Western Massachusetts Electric—122,316 sh (to be offered common-holders on 1-for-8 basis, record Oct. 5)	.....	.....	.....
Florida Power Corp—210,000 sh (to be offered on 1-for-10 basis to stockholders of record Oct. 8 to expire Oct. 26)	.....	.....	.....
POSTPONED, UNSCHEDULED, AND/OR UNDER CONSIDERATION			
Bonds			
Eastern Utilities Associated—collateral trust	$7,000	.....	.....
Monongahela Power—1st mtg—due 1983	10,000	.....	.....
Long Island Lighting—1st mtg	25,000(e)	.....	.....
Southwestern Public Service—1st mtg	12,000(e)	.....	.....
Mountain States Power—1st mtg due 1983	8,000	.....	.....
Preferred Stock			
Southwestern Public Service	$3,000(e)	.....	.....
Common Stock			
Iowa-Illinois Electric & Gas	$6,000(f)	.....	.....
Western Massachusetts Electric	4,000(e)	.....	.....
Southwestern Public Service—(to be offered on about a 1-for-13 basis)	.....	.....	.....
Virginia Electric Power—558,946 sh	.....	.....	.....
Iowa Electric Light & Power—230,000 sh	.....	.....	.....

Notes—(a) Company asks FPC to sell the stock privately; (b) First Boston Corp-Union Securities Corp. will sell the stock to institutions; (c) Plus 100,000 shares to be offered employees; (e) Estimated; and (f) To sell enough common stock to yield $6 million.

Not just a little more Protection...

Much More!

O-B Announces New THOREX® Multi-Purpose Lightning Arrester

Passing all American standards for heaviest duty, not only with ease but with great un-used reserve, the Thorex Multi-Purpose, Type MP, lightning arrester introduces a new order of protection and durability.

Long-duration disturbances occurring on extra-high voltage networks, in connection with large underground cable installations, or initiated by heavy static capacitor banks, cannot over-tax the great thermal capacity of the new Thorex.

Compared to previous station protective devices, this arrester offers a reduction in IR discharge voltage of 10 to 15 per cent. Combined with protective tolerances not exceeding +5% IR discharge and +10% sparkover voltages, a radically wider protective margin is established between maximum arrester performance and minimum apparatus insulation strength.

In all voltage ratings from 3 kv to ranges above 300 kv, the new Multi-Purpose Thorex requires no auxiliary bracing or support. In the higher ratings, this feature offers major savings in installed cost.

At 90 kv rating, and above, a special non-linear resistance is in parallel with the functioning elements. In addition to the linear series grading resistors, this maintains substantially uniform voltage division between units in the stack, regardless of semi-conductive surface contamination.

When you investigate the whole story of the new Multi-Purpose Thorex, you will see for yourself it offers *not* just a little more protection, but MUCH MORE!

Ohio Brass

MANSFIELD OHIO, U.S.A.

4403-H

Aluminum Firms . . .

. . . use less Northwest power now than during the peak war years, IEWA pamphlet reveals

Aluminum companies now use a smaller percentage of the total firm power produced in the Pacific Northwest than they did during the peak years of war production.

This fact was revealed in a new pamphlet issued by the Inland Empire Waterways Association, Walla Walla, Wash., on aluminum's role in the economy of the Pacific Northwest.

In 1944, before the final generator had been installed in Grand Coulee Dam and while many of today's Northwest power producers were on drawing boards, the Bonneville Power Administration sold 62.9% of its firm power to aluminum producers. In 1952, says the study, aluminum companies bought only 29.9% of the BPA firm production. Aluminum firms bought 1,380,000,000 kwhr of surplus power there was no other market for.

High Revenue . . . "The overall effect of aluminum reduction operations," says the pamphlet, "is to create lower power rates for other users. The net revenue to the government from the sale of firm power to the aluminum industry is relatively high because the power is consumed at points close to the generating plants and in amounts which allow maximum operating efficiency."

"The government also derives large revenue from aluminum producers for otherwise unsalable surplus power . . . It is almost clear profit."

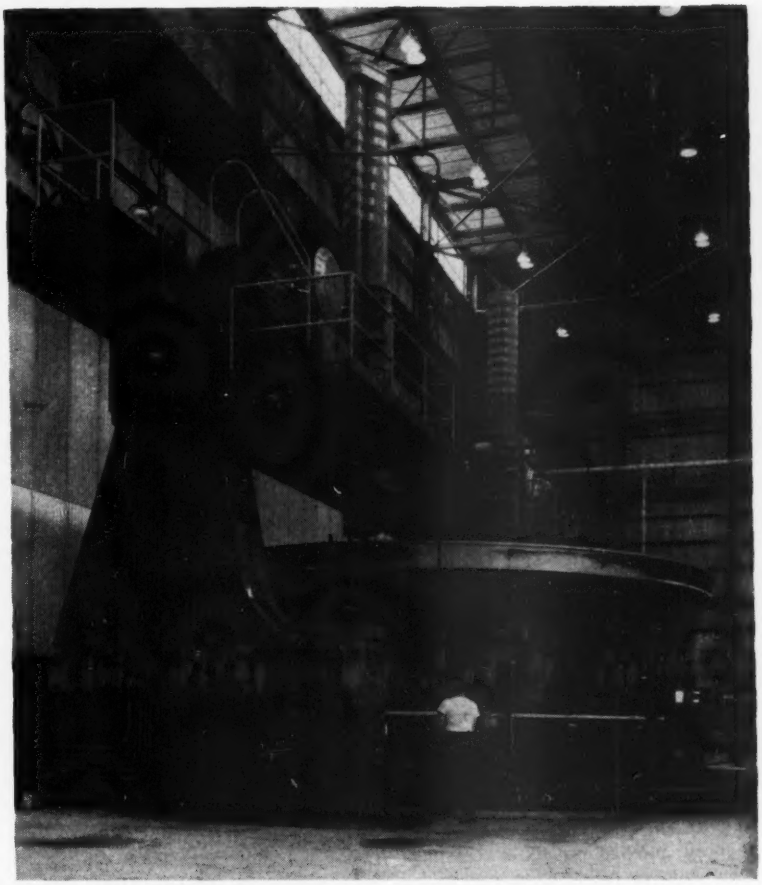
IEWA's pamphlet, entitled "Aluminum in the Northwest and What It Means to You," is one of the first nontechnical defenses written for the aluminum industry in the power field.

In a brief foreword, Herbert G. West, executive vice president of the association, comments, "In the few short years of its existence, aluminum has helped materially to balance the Pacific Northwest's raw materials economy. Aluminum has created jobs and new taxable wealth, brought hundreds of skilled workers into many N W communities, and shows great promise in the region through further growth of independent fabrication."

"All Northwest users of electric power increased phenomenally (since 1944)," the study reports. "Responsible for this has been not only the area's large growth in population and its general economic deevlopment, but a climb in residential power usage of about 300% in the last decade."

Figures quoted by the association indicate that in 1941 the average home in Oregon and Washington used 1,776 kwhr at a cost of 2.08¢ per kwhr. By 1951 the average climbed to 5,205 but the cost dropped to 1.34¢.

Copies of the pamphlet are free from the Inland Empire Waterways Association, P. O. Box 98, Walla Walla, Wash.



Ring Exhibited in New Smith Plant

The discharge ring (pictured above) was on exhibit when S. Morgan Smith Co formally opened its $3-million hydraulic turbine plant recently at York, Pa., for the inspection of company executives, technical press, and other manufacturing officials. The ring, shown on the 40-ft Mesta vertical boring mill, is for one of the 14 turbines the Smith company is constructing for the McNary Dam on the Columbia River in the Northwest.

The new, 100,000-sq ft building is situated on a 136-acre tract of land two miles from the firm's main plant. It has two bays 90 ft wide: one is 650 ft long and the other 400 ft. Plant's crane capacities will range from ten to 100 tons.

Westinghouse Insulators

In the Sept. 14 issue it was stated incorrectly that Westinghouse Electric Corp would end production of insulators at its Porcelain Division, Derry, Pa. Insulators will still be produced there for use in Westinghouse apparatus, though not for general sale.

MANUFACTURING BRIEFS

Reynolds Metals Co is reported negotiating for a firm power contract with BPA to establish a fabricating plant on the Columbia River below McNary Dam. Umatilla, Ore., city officials say Reynolds may locate near their town, which is 40 miles west of Walla Walla, Wash. Reynolds, say the officials, has been seeking a contract because pig aluminum supplies are sufficient to permit added fabrication plants.

General Electric Co's complete manufacturing and service facilities have been placed at the disposal of General Motors Corp to help restore production of automobile and truck transmissions at the fire-gutted Livonia Transmission Plant. GE factories throughout the nation have been working around the clock to replace and repair damaged electrical equipment destroyed in the fire Aug. 12. If 3,000 damaged machine tools can be reconditioned, GMC will attempt to get the machines back in limited production in six weeks at the temporary Willow Run Plant taken over in the emergency.

Okonite Co, Passaic, N. J., has announced publication of a 128-page data book on rubber-insulated power cables for use up to 35,000 v, reported to be the first technical book to deal with rubber-insulated cables for use at such high voltages. Entitled "Rubber-Insulated High Voltage Power Cables Up to 35,000 Volts," the new book, OK-1075, contains 29 pages of detailed drawings and instructions for splicing and terminating high voltage rubber-insulated cables. Free copies may be obtained by writing to Okonite Co, Passaic, N. J.

SALES ASSIGNMENTS

COMPANY STAFFS

Electric Controller & Manufacturing Co, Cleveland, has appointed John R. Woodruff Pacific Coast district manager. Woodruff, who was transferred from the Houston, Tex., office, will direct from his Los Angeles (Calif.) headquarters the following offices: Los Angeles and San Francisco, Calif., Seattle and Spokane, Wash., Portland, Ore., Vancouver, B. C., Edmonton, Alta., and Winnipeg, Man. Claude A. Mitchell, Jr. succeeds Woodruff as Houston district manager.

Jefferson Electric Co, Bellwood, Ill., has named John G. Stanwood as regional field sales representative in the Baltimore area. Stanwood, a member of Jefferson's sales service department since 1951, will supervise sales of the entire line of Jefferson's transformers, and fuses and solenoids. Prior to joining Jefferson Electric, Stanwood served as a salesman for Appleton Electric Co.

Riley Stoker Corp, Worcester, Mass., has announced that Robert K. Griffith, a sales engineer in the Philadelphia territory for the past year, is the new district manager for that area. Griffith, who has been associated with Riley Stoker for many years, succeeds R. M. Bassett, who retired recently.

Graybar Electric Co, Inc, New York, has named J. H. Gregerson manager and R. P. Sager operating manager of its newly opened San Bernardino, Calif., branch at 655 South H St. Gregerson, who joined Graybar in 1940, has been a salesman at Los Angeles since 1947. Sager, who started his Graybar career in the Los Angeles operating department in 1945, has served as head office salesman there since 1951.

Line Material Co has named Joe N. Drew field engineer in its South Central Division with headquarters at the company's Memphis, Tenn., office. He will handle L-M sales in western Tennessee, northern Mississippi, and southeastern Kentucky. Prior to joining Line Material, Drew was plant electrical engineer for the Crossett Paper Mills at Crossett, Ark.

Hammarlund Manufacturing Co, Inc, New York, has appointed Ray Ramon Midwest sales manager to operate out of the company's newly established Chicago office at 605 N. Michigan Ave. This office will be responsible for sales in Wisconsin, Minnesota, Illinois, Kentucky, Michigan, Indiana, and Ohio. Ramon formerly was a district sales manager for Fred L. Tourtelot Co.

Orangeburg (N. Y.) Manufacturing Co has named Harry N. Dietz as district sales manager for the Pacific Northwest with headquarters at San Francisco, Calif. Dietz, who began his career with Orangeburg in 1939, has been Southwest district sales manager since 1948.

MEETINGS CALENDAR

American Institute of Electrical Engineers
Middle Eastern District Meeting, Daniel Boone Hotel, Charleston, W. Va., Sept. 29-Oct. 1; Conference on Application of Motors to Air-Moving Equipment and Symposium on Induction Motors, Hotel Van Orman, Fort Wayne, Ind., Oct. 6-8; Fall General Meeting, Muehlebach Hotel, Kansas City, Mo., Nov. 2-6.

National Electrical Industries Show
Sponsored by Eastern Electrical Wholesalers' Association, 69th Regiment Armory, New York, Sept. 29-Oct. 2.

Public Information Program
Mid-Atlantic Region, Lord Baltimore Hotel, Baltimore, Md., Sept. 30; Steering Committee, Edgewater Beach Hotel, Chicago, Oct. 21; Workshop Conference, Edgewater Beach Hotel, Chicago, Oct. 22-23.

Great Lakes Power Club
Plankinton House, Milwaukee, Wis., Oct. 1-2.

Pennsylvania Electric Association
Fall Meeting, Relay Committee, Irem Temple Country Club, Dallas, Pa., Oct. 1-2; Joint Meeting of Transmission-Distribution Committee and Electrical Equipment Committee, Abraham Lincoln Hotel, Reading, Pa., Oct. 8-9; Fall Meeting, Meter Committee, Brunswick Hotel, Lancaster, Pa., Oct. 22-23; Fall Meeting, Communications Committee, Hotel Brunswick, Lancaster, Pa., Oct. 29-30; Fall Meeting, Systems Operation Committee, Castleton Hotel, New Castle, Pa., Nov. 5-6.

Southeastern Electric Exchange
Fall Meeting, Engineering-Operation Section, Carolina Hotel, Pinehurst, N. C., Oct. 1-2; Accounting Conference, Battery Park Hotel, Asheville, N. C., Oct. 15-16; General Sales Conference, Atlanta Biltmore Hotel, Atlanta, Ga., Nov. 19-21.

Interstate Power Club
Hotel Martinique, New York, Oct. 5; Hotel Martinique, New York, Dec. 7.

Edison Electric Institute
Prime Movers Committee, Detroit, Oct. 5-6; Transmission-Distribution Committee, Hotel Nicollet, Minneapolis, Oct. 8-9; Industrial Relations Committee, Fall Round-Table Conference, Sheraton Hotel, Chicago, Oct. 12-14; Meter-Service Committee, William Penn Hotel, Pittsburgh, Oct. 19-21; Electrical Equipment Committee, Jung Hotel, New Orleans, Nov. 2-3.

American Society of Mechanical Engineers
Fall Meeting, Sheraton Hotel, Rochester, N. Y., Oct. 5-7; Annual Meeting, Statler Hotel, New York, Nov. 29-Dec. 4.

Electric League of Western Pennsylvania
4th Industrial Electric Exposition, William Penn Hotel, Pittsburgh, Oct. 6-8.

Indiana Electric Association
Annual Convention, French Lick Springs Hotel, French Lick, Ind., Oct. 7-9.

Missouri Valley Electric Association
Sales-Rural Conference, President Hotel, Kansas City, Mo., Oct. 7-9.

Association of Edison Illuminating Companies
Annual Meeting, The Greenbrier, White Sulphur Springs, W. Va., Oct. 8-10.

National Association of Electrical Distributors
Fall Meeting, Pacific Zone, Hotel del Coronado, Coronado, Calif., Oct. 11-14.

Iowa Utilities Association
Management Conference, Hotel Fort Des Moines, Des Moines, Oct. 12-13.

Electrical Association of Philadelphia
Biennial Electric Progress Show sponsored by Manufacturers' Division, Convention Hall, Philadelphia, Oct. 13-15.

American Standards Association
4th National Standardization Conference and 35th Annual Meeting, Waldorf-Astoria, New York, Oct. 19-21.

University of Texas
Power Distribution Conference, Department of Electrical Engineering, Lower Colorado River Authority Auditorium, Austin, Oct. 19-21.

Oklahoma Utilities Association
Electric Light and Power Division, Eastern District, Vinita, Okla., Oct. 22; Western District, Norman, Okla., Oct. 23.

National Electrical Manufacturers Association
Annual Meeting, Haddon Hall, Atlantic City, N. J., Nov. 9-12.

Wisconsin Utilities Association
Electric and Gas Section Convention, Schroeder Hotel, Milwaukee, Nov. 11-13.

Pacific Coast Electrical Association
Annual Hawaiian Conference, Honolulu, T. H., Nov. 19-20.

***Eastern Joint Computer Conference-Exhibition**
Sponsored by Institute of Radio Engineers, Association for Computing Machinery, and American Institute of Electrical Engineers, Statler Hotel, Washington, D. C., Dec. 8-10.

Public Utilities Advertising Association
Region Two, Annual Meeting, Skytop, Pa., Dec. 10-11.

*Addition this week.

New cable withstands 1400 F flame for 24 hours in grueling laboratory test.

Protect vital circuits against fire with new G-E control cable

Silicone-rubber insulation adds years to life of cable used in high-temperature applications.

General Electric's new control cable, for installation in extremely high ambients, will maintain circuit integrity even in case of severe fire along the cable run. In addition to withstanding heat (maximum ambient temperature for continuous operation is 257 F), the new G-E cable has an insulation that has the moisture resistance of the best grades of rubber—a combination never before possible.

No special tools or fittings are required to handle the new cable. Installation practice is generally the same as with any other rubber-type cable.

For vital control circuits in power stations, around boiler rooms, or in high-temperature processing operations, you should investigate G-E cable number SI-58134. See your G-E Wire and Cable specialist, or write to Section W88-927, Construction Materials Division, General Electric Company, Bridgeport 2, Connecticut.

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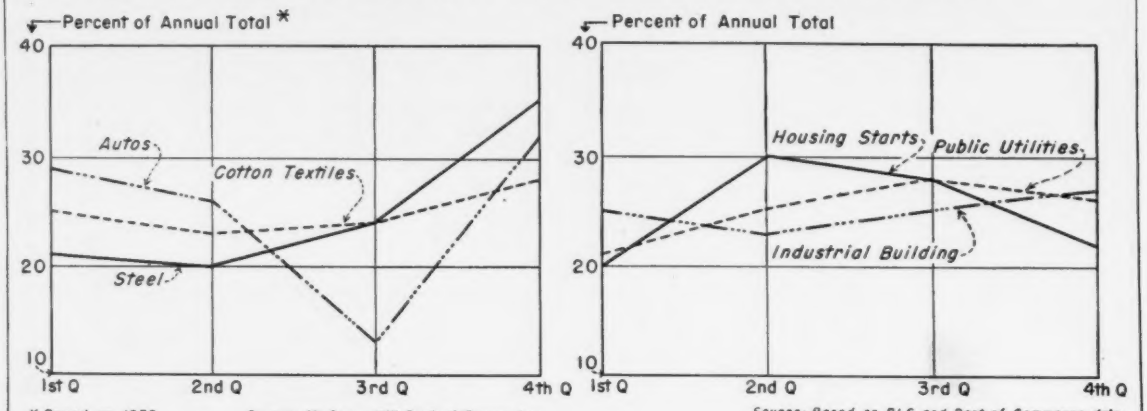
ELECTRICAL BUSINESS OUTLOOK

Prewar Seasonal Patterns in Industry . . . and Recent Seasonals in Construction



Seasonal Changes Fog Forecasting

Seasonal ups and downs—a minor factor for many industries in recent years—are on their way back. From now on, anyone interested in forecasting business activity will have to sort these seasonal changes out of the statistics before he can recognize the really basic trends in business.

This raises a major problem for utilities or other groups interested in business forecasting. Suppose automobile production drops in October. In earlier postwar years, that would have meant simply that steel was scarce or that the industry was preparing for a model changeover.

But now it might mean that sales are not going well. The problem is to tell whether the drop in production or sales is purely seasonal or whether it shows a downward move in demand for cars.

Seasonal Patterns Hard to Recognize . . . Recognizing seasonal patterns will not be easy. That's because seasonals don't stay constant. They change, in the long run, as the economy changes. So the postwar seasonal pattern in steel production as an example may be different from the pattern before the war.

The Federal Reserve Board index of industrial production illustrates this problem. The seasonally adjusted index is based on prewar seasonal patterns in industry. Yet the index drops every July when many plants grant vacations to their workers. The reason is that plant-wide vacations are relatively new—one of the newer seasonal influences in the economy.

The plant-wide vacation in July is just one illustration of new influences on seasonal business patterns. Some industries deliberately try to change their seasonal patterns. Utilities are an example. They have encouraged the growth of air conditioning to eliminate the summer seasonal drop in power consumption. And production of air conditioning equipment has meant a new production schedule for makers of electrical appliances.

Three prewar seasonal patterns are illustrated on the chart above, on the left. Seasonal movements in these industries will probably still resemble their prewar form in the future. But there may be some significant changes.

Take autos as an example. In 1939 (the year on the chart) auto makers retooled in August, then started producing new models at a high rate in October. So production was seasonally low in the third quarter and high in the fourth quarter. And the seasonal pattern in autos affected all the industries that sell to Detroit—for instance, steel was also high in the fourth quarter.

Auto Industry Has New Seasonal Peak . . . But now, Detroit retools near the end of the year, introduces new models in January. So there will be a different seasonal peak not only in the auto industry but also in steel and other related industries. They should both run very high in the January-March months.

Seasonal patterns in construction (other chart) are less likely to change with the years. That's because building is tied so closely to the weather. But there is some shift as the result of technological developments. Builders have learned to overcome some of the effects of weather; so they can now do more work in the winter.

Pinning down some of the new seasonal patterns is going to be difficult. The Federal Reserve Board has tried to do it in its new production index, due late this fall. But even the FRB can't be sure that it's got the patterns right—because there is so little good postwar experience to go on. So this will be a serious problem for business forecasters until there have been a few years of more "normal" operation in the economy.

CARBON BLACK TAPES in ANACONDA Type CB Cable keep deterioration products outside dielectric field . . . lengthen cable life.

"Hungry" tapes add life to this cable

Colloidal carbon can purify and stabilize many fluid mixtures—a property important to chemists. It's important, too, to cable engineers. For it can do the same for impregnating oil in paper cables. At Anaconda, tests with cables made with carbon-black tapes proved it!

These tapes are "hungry" for oil-deterioration products created by high heat and electrical stress. They stop ionization discharges. They keep insulating oil "alive." The life span of ANACONDA Type CB* (Carbon Black) Power Cable greatly exceeds that of ordinary impregnated paper-insulated cable. Type CB cables in service over 12 years have proved their superiority.

For greatly extended sheath life of ANACONDA Type CB Cable, specify ANACONDA F-3** alloy. This superior alloy-lead sheath won't age-harden . . . resists slow-bending fatigue, creep, burst and abrasion. Cable joint sleeves also are available in this same alloy. They all offer higher tensile strength, a 50% higher bursting strength than copper-lead, lower creep rate and similar increased resistance to bending fatigue and vibration.

For the full story on this superior, time-tested cable, see your Anaconda Representative. *Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.*

*CB — Carbon Black (U. S. Patents 2,102,129, 2,405,853) Reg. U. S. Pat. Off.

**F-3 — Arsenic-Lead Alloy (U. S. Patents 2,300,788, 2,375,755, 2,504,600 and 2,570,501) Reg. U. S. Pat. Off.

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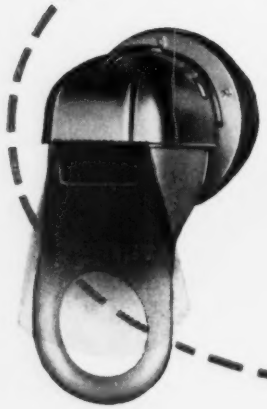

Thermalite Indicator Automatically Checks Distribution Transformer Loading

You get plenty of warning when overloads caused by load growth are nearing the limits of voltage regulation and transformer capability, thanks to the *Thermalite* overload indicator. A signal light on the transformer, clearly visible from the street, singles out overloaded units without the expense of a complete load survey. You get ample time to make a change in your distribution system without sacrificing service continuity.

On most distribution systems, the peak load is limited by the allowable secondary voltage drop. The *Thermalite* indicator lights up when you've made full use of transformer overload capacity within voltage regulation limits. It does not respond to momentary abnormal overloads.

Operation is simple. A thermal element located in the top oil, away from all live parts, actuates the signal lamp circuit. The brilliant signal lamp remains lit until reset by means of a convenient external handle.

Stretch your transformer dollars by taking advantage of the inherent overload capability of your distribution system without sacrifice of service continuity. The low-cost *Thermalite* overload indicator is available on Allis-Chalmers distribution transformers 100 kva and smaller, 15 kv and lower.

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For more information, contact the A-C district office nearest you, or write Allis-Chalmers, Milwaukee 1, Wisconsin.

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